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machines will watch us die:
a curatorial study of
the contemporaneity of digital decay

Patrizia Costantin

PhD 2018

machines will watch us die: a curatorial study of the contemporaneity of digital decay

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A thesis submitted in partial fulfilment of the requirements
of the Manchester Metropolitan University for the degree
of Doctor of Philosophy

Department of Art

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‘As machines become more and more efficient and perfect,
so it will become clear that imperfection is the greatness of man.’

Ernst Fischer
The Necessity of Art (1959, trans. 1963)

Abstract

The research project documented in this thesis sought to explore the contemporaneity of digital decay. The main research question of this practice-based PhD – how can the curatorial explore the contemporaneity of digital decay? – is articulated in three main aims. The first aim – to curate the research exhibition *machines will watch us die* and integrate it with a symposium, an artist talk and screening and an exhibition tour – demonstrates that the curatorial is the most appropriate set of methods to answer the research question. The second aim – to develop a post-medium approach as a means to comprehensively explore digital decay's contemporaneity – shows that this study distinguishes itself from curatorial strategies based on medium-based immaterial behaviours. The radicant was embedded into the curatorial to comprehensively address artworks that critically explore digital materiality beyond the myth of immateriality, which has shaped most discourses on curating digital art. This step was also fundamental in terms of rethinking curatorial strategies for digital art after the material turn. The third aim – to develop a temporal notion of digital materiality – enables the research project to address decay through the various materialities and temporalities of digital culture.

In *machines will watch us die*, digital decay emerged through the multi-temporalities embedded in the artworks' materialities. The idea of contemporaneity, also rooted within the set of methods, was crucial in defining materiality. This temporal notion of digital materiality was developed by incorporating insights from the field of media archaeology (medianatures, deep time, zombie media), new materialism (vibrant matter and intra-action) and exhibition practice (*Les Immatériaux*) into the research exhibition, which is here intended as the space where contemporaneity can be experienced.

By rethinking and testing out curatorial strategies for art embedded with digital materialities under the framework of the material turn, digital decay was revealed through the material limitations of digital culture. The catalogue, the artist talk and screening, the symposium, and the exhibition tour are also part of the curatorial set and support the contribution to knowledge as well as contextualising it beyond the field of curating. As the catalogue and the events expand the research beyond the curatorial, the theoretical framework of the exhibition and the findings of this study have been opened up for discussion within a variety of fields, such as media archaeology, science fiction, art practice and new materialism.

The documentation of the exhibition, the events, the rationale, the exhibition guide and the catalogue (a copy of which is also included in the appendix), can be found in the online portfolio at www.patrizia-costantin.com. The portfolio provides a useful resource and should be looked at before reading this thesis. As it includes both a visual documentation and a supporting writing material, the portfolio supports a thorough examination of this study and should also be consulted throughout the reading of the chapters.

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Introduction

> 'Within new media history, media theory and cybercultural studies, this provocation [the material turn] has focused attention on the materiality of the medium, of information, and of communication, inspiring research on a wide range of topics, from the material substratum of media to the human body's interaction with technology to the socio-economic systems which support that interaction.' (Brown, 2010:50)

The practice-based research documented in this thesis sought to curatorially explore the contemporaneity of digital decay. Through the research exhibition *machines will watch us die*[1]; an exhibition tour,[2] an artist talk and screening[3] and a symposium,[4] this research project is a curatorial study which aimed to analyse the material nature of digital decay to reveal its vastness and extent, and show how impactful digital decay will be – and perhaps already is – on contemporaneity. Curatorial research analysed notions addressing the geological and the temporal nature of digital decay and was inspired by materially-driven discourses on media studies,[5] as well as exhibition practice.

The different methods within this study were developed to address the various facets of digital decay that emerged through the research. The methods were also designed to target multiple audiences and various levels of engagement. The research exhibition shaped epistemic findings and tested out strategies for the curation of digital art which were developed as a consequence of the adoption of a post-medium approach. The events brought together artists, theorists and different audiences and facilitated further debate on the themes and ideas emerging from the exhibition. They also enabled a collective experience of *machines will watch us die* while widening its conceptual framework. These layers of the curatorial provided me with the tools to undertake this research project, explore the notion of digital decay, disseminate research outcomes and further analyse the subject of the investigation.

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[1] The Holden Gallery, Manchester, 9th of April-11th of May 2018.
http://www.holdengallery.mmu.ac.uk/2018/machines-will-watch-us-die/

[2] 19th of April, The Holden Gallery.

[3] 8th of May, The Holden Gallery Film Space.

[4] 11th of May, The Holden Gallery Film Space.

[5] These refer specifically to media archaeology and media geology. Parikka defines 'geology of media' as a 'different sort of temporal and spatial materialism of media culture' (2015:3) which applies the idea of deep time to media materialism in order to analyse the materials of technology as active agents – or the zombie media of planned technological obsolescence – that partake in contemporaneity. The research investigated how recent developments in the field of media archaeology could inform curatorial methodologies for art that explores the material and the immaterial as co-dependent features of the digital.

This research project sought to answer the main research question – how can the curatorial explore the contemporaneity of digital decay? – by articulating it in three main aims. The first aim sought to develop a curatorial project through the research exhibition *machines will watch us die*, to which a symposium, an artist talk and screening and an exhibition tour were integrated to enable a thorough exploration of the contemporaneity of digital decay. Initial research was developed through the research exhibition – the most concrete manifestation of the curatorial – which led this study throughout. The most appropriate epistemological approach for this project, the research exhibition enables a visualisation of the connections between decay and contemporary socio-political and cultural phenomena. As a spatio-temporal framework that negotiates knowledge and ideas in a visual way, it partakes in the contribution to knowledge. Each artwork was chosen for its ability to visualise specific aspects of digital decay, as well as enabling visual connections between key research concepts and ideas.

This study argues that to fully answer the research question, the research had to be based on a post-medium approach that truly responds to the contemporary condition and enables an exploration of digital decay beyond the immaterial/material dichotomy that characterises many curatorial approaches to digital art. The second aim sought to develop a post-medium approach – which puts an emphasis on the artwork's materiality rather than the medium – as a means to comprehensively explore digital decay's contemporaneity. Hence, behind all elements of the curatorial lies Nicolas Bourriaud's post-medium approach, the radicant (2009), the adoption of which was fundamental in relation to the process of rethinking curatorial strategies for digital art after the material turn. Both the exhibition and the series of events demonstrates that alternatives to curatorial strategies based on immaterial behaviours are needed to curate artworks engaging with the temporal materiality of the digital.

To conceptually explore and reveal a materially-oriented idea of digital decay, the third aim sought to define a post-medium understanding of digital materiality. This temporal notion was linked to ideas of contemporaneity (Cox and Lund, 2016), medianatures (Parikka, 2012) and the radicant (Bourriaud, 2009). The material nature of digital decay and its representations in the research exhibition – which emerge through aspects such as the futility of technological value; nostalgia; the hidden materialities of networks, finance and capitalism; the geological nature of materials strata; future fossils; compression, fragmentation and loss of memory – visualised complex notions and served as a catalyst for the events and the catalogue. It also shows the timely addition that a curatorial project focused on exploring a materially-oriented notion of digital decay could make to discourses emerging from the field of media archaeology, which support a critical discussion on digital materiality within the framework of the Anthropocene. The contribution to knowledge is here provided by the ways in which different ideas and methods were integrated into the curatorial in order to research a notion of digital decay that goes beyond immateriality and conceptions of the digital as a cloud of immaterial utopias.

Digital decay was defined as a 'process of different forms and temporal dimensions'[6] and emerged in the research exhibition in the interconnections between metals, ores, rare earth minerals and pixels, data and software. In this context, the artworks became the vehicles through which an idea of digital decay can be presented to the audience. Through the works of Cory Arcangel, Emma Charles, Martin Howse, Rosemary Lee, Rosa Menkman and Shinji Toya, the exhibition revealed digital decay as a material process entwined with contemporaneity. Each artwork explored digital materiality from a different angle, allowing digital decay to emerge from a variety of perspectives. Cory Arcangel's *Super Mario Movie* (2005), *Vai/Lakes* (2014) and *Jeans/Lakes* (2016) involves humorous comments about futility, a conscious unsettling of technological values and nostalgic translations of a recent, though obsolete digital past. Emma Charles' *Fragments on Machines* (2013) addresses the hidden materialities of networks, their processes and infrastructure within the context of finance and capitalism. *Surfaces of Exchange* (2012) represents Charles' enquiry into our technologically-determined time to reveal how the urban landscape has been altered by the advent of the digital.

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[6] This is how the idea of digital decay was presented to the audience of the exhibition. This is the definition of digital decay that appeared in the rationale.

Martin Howse's *Test Execution Host* (2018) challenges our understanding of digital materiality and excavates the material processes – which allow software to function – that would otherwise remain invisible. *Molten Media* (2013-2018) by Rosemary Lee reveals the ways in which digital materiality interlinks the technological and the environmental, situating her practice within the fields of media theories and conceptual art. Rosa Menkman's *To Smell and Taste Black Matter* (2009) explores noise artefacts that result from glitch, encoding and feedback to question practices of standardizations and resolution. *3 Years and 6 Months of Digital Decay* (2016-2019) by Shinji Toya investigates processes of digital fragmentation and memory that are often expressed in transformation. *machines will watch us die* set out to conceptually define and reveal a materially-oriented notion of digital decay through a variety of curatorial strategies and methods. Without hearing the convergence of sounds, experiencing the lack of interaction, and without being immersed in the mix of temporalities which form digital culture – visualised by the works in the space – the contemporaneity of digital decay would not have manifest. This demonstrates that the research exhibition had a fundamental role in answering part of the research question, in shaping the research process as well as its findings.

To curatorially explore the contemporaneity of digital decay, the radicant (2009) was embedded in the research as it is a take on the post-medium that shares its relational nature with the curatorial itself, as well as providing a critique to the digitalised and globalised world parallel to that emerging in this study, and in the media archaeological framework which concurred to shape part of the methodology. Bourriaud (2009) developed the radicant as part of his exploration of the 'altermodern'; the contemporary moment beyond the modernist utopias and postmodernism.

> 'Radicant art implies the end of the medium specificity, the abandonment of any tendency to exclude certain fields from the realm of art.' (Bourriaud, 2009:53)

Bourriaud (2009) encourages the abandonment of the notion of the medium in favour of the radicant, as he argues that medium-specificity is mainly used to defend the field we work in, an idea that also fails to understand that everything is connected. The radicant is also a notion that allows for new cultural connections to emerge in a space of negotiations and translations not dissimilar to that of the research exhibition. Bourriaud looks at digitisation and its repercussion on art, the idea of material, obsolescence and preservation. Even if his discussion is still tied to the analogue/digital divide, he recognises the fluidity of digital materials and looks at translation as a means to explore the connections between machines, code and humans in the contemporary. However, he condemns (1998) art that uses computers as representational methods dictated by production needs. In *machines will watch us die* this was translated into a disinterest for digital art that is not meta-critical of its materiality.

The adoption of the radicant caused the abandonment of curatorial strategies based on medium-specificity and immaterial behaviours. As a consequence, a definition of digital materiality that was able to address both the material and the immaterial expression of the digital in the contemporary had to be developed. To do so, the *immaterials* – a term that symbolises Lyotard's investigation into the impact of new technologies on society (Lyotard, 1985) –, medianatures – the representation of the nature-culture continuum (Parikka, 2012) – and the idea of contemporaneity – a 'present constituted by the bringing together of a multitude of different temporalities on different scales' (Cox and Lund, 2016:9) – were embedded into this study. The latter[7] is used in the research exhibition for the theoretical implications it introduces in relation to both the definition of materiality and the curatorial set of methods.

The concept of the immaterial embodies Lyotard's way of questioning the materiality of digital culture as it represents the shift from material (medium) to materiality. Curated by Lyotard and Thierry Chaput for the Centre Pompidou in Paris, *Les Immatériaux* (1985)[8] influenced *machines will watch us die* in a manner that was twofold. It introduced new ways of looking at the materiality of digital technology,[9] thus contributing to defining the temporal notion of digital materiality, while also suggesting that the proliferation of digital technology would lead to a dystopian society. It explored the effects of the digital on culture, of which the loss of authenticity, the myth of immateriality, acceleration and connectivity are here relevant. It did so at a time when the shift from analogue to digital was still taking place and was promoted as the hope for a better world. This exhibition also influenced the development of curatorial methods as *Les Immatériaux* inspired strategies which aimed at creating a feeling of unease; a catalyst for experiencing digital decay in the exhibition, as addressed below.

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[7] Depending on the context, the term sometimes appears in the chapters as 'the contemporary' or 'contemporary condition'. These variations should always be understood within the framework proposed by Jacob Lund, Verina Gfader, Anne Kølbæk Iversen and Geoff Cox in the aforementioned definition of contemporaneity.

[8] Jean François Lyotard and Thierry Chaput, *Les Immatériaux*, 28th of March – 15th of July 1985, Centre George Pompidou, Paris. https://www.centrepompidou.fr/cpv/resource/cRyd8q/r6rM4jx

[9] This landmark exhibition also concurred with defining curatorial understandings of the materiality of digital culture, as chapter 2 explores.

This is further emphasised in the idea of decay that embodies the failures of digital utopias. The artwork as zombie media – anachronistic technology out of its proper time (Hertz and Parikka, 2012) – is able to cross layers of contemporaneity and contribute to the unease that characterises the exhibition. In the context of this study, zombie media is a concept that links theories of material agency to art and the curatorial.[10] Reading zombie media in terms of contemporaneity contributed to critical discussions on decay in relation to the various temporalities embedded in the digital. The idea behind this concept is that obsolete devices accumulated in landfills act like zombies: as products they have lost their value in western capitalist society, but their materiality still plays a geo-political, social and economic role. By referring to the materiality of obsolete technology as not dead, the audience was invited to assign agency to digital materiality and reflect on its contemporaneity.

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[10] In 2011, Hertz collaborated with Parikka for the Zombie Media Project that comprised a workshop at Transmediale (2011) and a published article and manifesto. They encouraged the participants to explore do-it yourself practices like circuit bending, and to turn obsolete media technology into musical instruments. Hertz's project was also dedicated to sensitizing people to the issue of e-waste, but like the majority of approaches in the field of media archaeology his project was still tied to the transition between analogue and digital. Instead, the exhibition provided a new perspective on the issue of obsolescence by focusing solely on the decaying materiality of the digital. Also of interest is Hertz's Dead Media Research Lab (2009) which is a media archaeological-appropriation of Bruce Sterling's Dead Media Project (1995). *machines will watch us die*'s narrative recalled aspects of the Dead Media Project founded by Bruce Sterling in 1995, which was commissioned by the Museum of Contemporary Art in Los Angeles. A collection of notes, it represented an archive of obsolete technology aimed at contextualizing the great popularity, acquired by the personal computer as an instrument for writers, within wider historical coordinates. Complete with a Manifesto, the project ended in 2001 after collecting about 600 entries that never materialized in print (the publication of a coffee table book was meant to accompany the project). On the same line of enquiry, *Embrace the Decay* (2003), Sterling's first interactive artwork simulated a decaying electronic text paired with a typewriter that deteriorates until it reaches its burial site. In his projects, the science fiction writer questioned the ephemerality of the digital and the issues related to accumulating obsolete technologies. Sterling offered one of the first examples that connected the decaying process typical of organic matter to the obsolete and inorganic materiality of technology. In the 1990s, he explored the newness of the digital in relation to the obsolescence of the analogue. However, due to the unprecedented quest of producing ever new digital devices, it is not necessary to go back to the analogue era to address digital decay, which is why the exhibition did not feature artworks exploring analogue culture.

Jussi Parikka's idea of medianatures (2012)[11] was incorporated into this study as a theoretical image which enables the visualisation of digital decay. Medianatures helps to conceptualise the link between the effects of digital decay – which are exemplified in the lack of interaction as the most immediate one in the exhibition – and contemporaneity, with the aim of creating a theoretical framework that would make decay accessible to the audience. This concept makes explicit the connection between digital culture and deep time, inviting the audience to think in less anthropocentric terms. Incorporating medianatures within the research exhibition was helpful in overcoming the immaterial/material dichotomy. It also allowed for the micro and macro temporalities of the digital to be addressed as an essential part of the notion of digital materiality.

The idea of contemporaneity (Cox and Lund, 2016) was applied to connect digital temporalities (deep time, immediacy of data, as well as those involved with the concepts of zombie media and obsolescence, for instance) to the present experienced by the audience. The 2016 Liverpool Biennial[12] is the most relevant example of how the exhibition can become a space for both exploring and defining contemporaneity. Its conference and relative publication, 'The Biennial Condition' (2016), addressed how art practice concurs to determine the notion of contemporaneity, which is further defined as 'the bringing together of a multitude of different co-existing temporalities in the same historical present; it is an intensified planetary interconnectedness of different times and experiences of time' (Lund, 2016: online). The adoption of such an understanding of time was fundamental in facilitating the exploration of complex notions, such as deep time and real-time, thus enabling the curatorial to include posthuman timescales within the confined timeframe of the exhibition.

In this context, Nicolas Bourriaud's idea of the radicant (2009) informed both the research exhibition's theoretical framework and the methods. Bourriaud's understanding of the post-medium debate shares with *machines will watch us die* the conviction that the process of exploring new materialities cannot be tied to a modernist, and therefore pre-digital notion of medium-specificity. In adopting such an approach, the curatorial was able to go beyond the medium-based attitude that defines widely recognized curating strategies for new media,[13] such as Christiane Paul's (2008) and Sarah Cook and Beryl Graham's (2010). In the research exhibition, for instance, the absent presence of interaction strategy was developed to propose an alternative to the focus on immaterial behaviours. It also responded to preservation strategies for digital art based on migrating the immaterial to newer hardware.[14] Developed as a consequence of the adoption of the radicant and the temporal notion of materiality that emerged from the latter, this lack of interactivity was contextualised in relation to theories of vibrant matter (Bennett, 2010) and intra-action (Barad, 2007). These, in turn, emerged following the introduction of medianatures (Parikka, 2012) to the curatorial research.

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[11] Parikka relates this concept to Donna Haraway's natureculture (Parikka, 2015:15). It is here contextualised within strategies of overcoming the manmade dualism between nature and culture also put forward by Bruno Latour (1991).

[12] *Liverpool Biennial*, 9th of July 2016 – 16th of October 2016, various locations, Liverpool. https://www.biennial.com/archive/2016

Parikka's work on materiality also contributed to developing this temporal notion of digital materiality, as it introduced the idea of deep time, which is here understood in relation to contemporaneity. Linked to new materialist insights on the subject,[15] his idea of temporality, which builds on Siegfried Zielinski's notion of deep time (2006), enabled the exhibition to reposition the idea of decay within geological space-time coordinates, the possibilities of which are not exhausted within analogue artistic practices addressing still life within a human's lifetime.

> 'The media theoretical deep time divides into two related directions:
>
> 1. Geology refers to the affordances that enable digital media to exist as a materially complex and politically economically mediated realm of production and process: a metallic materiality that links the earth to the media technological.

---

[13] Approaches to curating digital art (Paul, 2007; Cook and Graham, 2010) have often been based on medium-based immaterial behaviours – which Steve Dietz defines as interactivity, connectivity and computability (1999).

[14] At the end of the 1990s, when the interest for interactive digital art was at its peak, curators and museum professionals were particularly concerned with preserving the immaterial and interactive expressions of the artwork. In 1999, for example, The Variable Media Initiative was founded with the aim of developing preservation strategies, such as emulation and software migration. Today, Rhizome and a variety of other institutions contribute to this initiative with the scope of preserving the artwork in its immateriality. Rhizome's Net Art Anthology is an example of this tendency.

[15] Timothy Morton's hyperobject (Morton, 2010) and Quentin Meillassoux's dia-cronic image (Meillassoux, 2008) both explore time as a notion that spans billions of years and is constitutive of dynamic materiality, which in the case of Meillassoux existed prior to "every terrestrial relation to the world" (2008: 112). Morton (2008:112) defines the hyperobject through its being transcendental to spatio-temporal specificity. As examples, he mentions global warming and radioactivity.

> 2. Temporalities such as deep time are understood in this alternative account as concretely linked to nonhuman earth times of decay and renewal…' (Parikka, 2015:44)

A conception of digital materiality that also refers to vibrant matter (Bennett, 2010) and intra-action (Barad, 2007) influenced the choice of the title *machines will watch us die*, which was also contextualised in relation to the idea of zombie media (Hertz and Parikka, 2012). The title was not a neutral one and it did not refer to the theme of the exhibition directly. It was significant in setting the tone as well as playing an important role in opening up questions and modes of viewing for the audience. It alluded to the technological lifespan of machines as being one that is longer than that of humanity, as the idea of zombie media (Hertz and Parikka, 2012) argues. Its bleak tone also referred to classical dystopian scenarios that saw the rise of the machine against humans in science fiction literature ('2001 A Space Odyssey' by Arthur C. Clarke, 1968), and cinema (*The Terminator*, 1985; *Ex Machina,* 2014, directed by James Cameron and Alex Garland, respectively), for instance. The title contributed to the audience's experience of the exhibition, which was also influenced by the pervasive soundtrack that permeated the gallery throughout. The title was meant to be contextualised by the rationale, which introduced the audience to the ways in which digital decay was addressed in the exhibition. The rationale was not the first layer of the exhibition that I wanted the viewers to discover. Seeing the title, hearing the exhibition soundtrack and encountering Martin Howse's work at the very beginning of their experience would have opened up enquiries regarding the content of the exhibition, as explored in chapter three.

Through connecting the notion of digital decay to the geological past of its materials, the recent past of digital utopias and the present of the exhibition experience, *machines will watch us die* enabled speculations of a future that for human beings is:

> 'no longer perceived as a promise, but rather as a threat. The future is a time of uncertainties and disasters; disasters which, moreover, are caused by ourselves…' (Lund, 2016: online)

In the exhibition narrative, decay was conceptualised as a systemic process of digital culture that is difficult to perceive in human terms due to its temporal nature. As decay emerged as something which appeared to be missing from the exhibition – an element that was methodologically mirrored in the absent presence of interaction – a sense of unease was meant to arise. Building on Jean-François Lyotard's writings on the sublime (1984) and on *Les Immatériaux* (1984; 1985), this feeling was meant to trigger a creative experience for the viewer. However, Lyotard's unease was directed at revealing the anxieties related to digital potentialities and immaterial utopias of the 1980s. In *machines will watch us die*, this unease was instead intended as a means to address digital decay through the material by-products of digital culture, which are beginning to emerge in the present.

The temporal notion of digital materiality developed for *machines will watch us die* challenged the myths and utopian thinking associated with the digital. Although the notion of immateriality prevails in artistic and curatorial studies on digital art – Christiane Paul refers to this as the myth of immateriality (2008) – a renewed awareness of the physicality of digital technology was fundamental to reconceptualising decay. Along the same lines of the myth of immateriality, the myth of interactivity is the characteristic through which the digital has been widely promoted since the beginning of the 1990s (Huhtamo, 1995; Gansing, 2003). As Erkki Huhtamo explains 'interactive technology has been marketed as a patent solution for almost any problem in today's post-industrial society' (1995:online). Kristoffer Gansing also refers to interaction as something that 'is sold as an 'empowering' phenomenon, but which in reality functions as a basic constituent of a regulative consumer society' (2003:online). He argues:

> 'Interactivity might not be a very exact term to describe any specific functionality of digital media, but through its everyday use, it has come to possess a kind of imaginary power – denoting a desire for the 'new' (2003:online).

To critically engage with the material process of digital decay, understanding immateriality in terms of dematerialization and interaction would have been an unsuitable approach for revealing the tangible presence of decaying technology. It would also have confined the exploration to medium-based curatorial strategies for digital art based on immaterial behaviours, conflicting with the adopted theoretical framework of media archaeology. The correspondence between the dematerialization of the art object and the immateriality of information networks has shaped curatorial discourses in which medium-based categories, such as new media, electronic art and digital art are used interchangeably[16] (Paul, 2016). For *machines will watch us die* the label digital art was adopted to refer to art that critically engages with the materiality of digital technology in any form. Without distinguishing between new and old digital hardware and software, decay is intertwined with the material and the immaterial of both obsolete and not yet obsolete technologies.

The focus on questioning various aspects of digital culture through its own materiality seems to have gained momentum among small institutions and festivals.[17] However, to further contextualise it and outline the ways in which *machines will watch us die* distances itself from exhibitions and initiatives that reinforce the immaterial/material dichotomy, *Electronic superhighway: from experiments in art and technology to art after the Internet (2016-1966)* (Whitechapel, 2016)[18] and *Seeing Double* (Guggenheim, 2004)[19] will be looked at in chapter two, where a discussion on immateriality takes place. However, research-based projects are here outlined in order to understand *machines will watch us die*'s position in relation to other recent research-based exhibitions and festivals.

Transmediale *afterglow* (2014)[20] and *Digital Matter. The Earth Behind the Screen* (2018)[21] focused on investigating digital materiality through the consequences that its extraction, use, distribution and discarding have on socio and geo-political levels. Transmediale *afterglow* (2014) explored the contemporary moment in which the ambivalence of digital culture – trash or treasure – becomes evident as the afterglow of the digital revolution. The programme consisted of a series of screenings, performances, installations, an exhibition and a conference that addressed the *afterglow*. The screening programme investigated themes such as big data and surveillance, while the conference mainly focused on the ambivalence of digital culture and the idea of the afterglow as a moment of transition: from the idea of technology as progress to the idea of technology as trash. *afterglow* engaged with issues such as e-waste and technological detritus as a potential for new forms of expression. It thus created a framework for exploring art practices addressing the materiality of new media in a post-digital world. More recently, *Digital Matter. The Earth Behind the Screen* at the Centre for Chinese Contemporary Art questioned the environmental and human costs that technological advances have caused. The physical impact of technology was addressed by exposing the devices' cycle of production and decomposition in order to make the viewers question practices of consumerism.

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[16] Christiane Paul (2016) defines digital art as art that has employed technology at any stage, while new media art, also problematic because of the relativity embedded in the concept of the new, is considered to be a subcategory of digital art aimed at the production of less material artworks that embody the behaviours, such as connectivity and participatory, of the medium.

[17] However, it also links with mainstream exhibitions such as *Les Immatériaux*, as chapter two discusses.

[18] Omar Kholeif, *Electronic superhighway: from experiments in art and technology to art after the Internet (2016-1966)*, 29th of January – 15th of May 2016Whitechpel Gallery, London. https://www.whitechapelgallery.org/exhibitions/electronicsuperhighway/

[19] *Seeing Double: Emulation in Theory and Practice*, 18th of March – 16th of May 2004, Solomon R. Guggenheim Museum, New York City. http://www.variablemedia.net/e/seeingdouble/

[20] *Transmediale afterglow*, 29 January – 2 February 2014, various locations, Berlin. https://transmediale.de/content/afterglow

[21] *Digital Matter. The Earth Behind the Screen*, 3 November 2017 – 4 February 2018, CFCCA, Manchester http://cfcca.org.uk/

Along the same lines, the exhibition *Conflict Minerals*[22] at Art Catalyst (2017) analysed the way in which technological progress is 'underpinned by a material reality that depends on extracting the planet's natural ores, driving a global mining industry'.[23] The show explored the methodologies adopted by artists to address geo-political issues in the Anthropocene. The Abandon Normal Devices (AND) Festival[24] (Castleton, Peak District, September 2017) looked at themes of verticality and deep time within the context of the cave. It combined the geological with an exploration of digital memories in relation to preservation strategies. During the festival, artists created installations within the natural environment of the Peak District. The works unearthed rare sounds, simulated environments and addressed technological ruins beyond human time. Part of the festival, the exhibition *Digital Dark Ages* explored the challenges of digital preservation in relation to archiving, while also questioning what the digital is really made of and what should be preserved. Closer to *machines will watch us die*'s rationale, *Liquid Cristal Display*[25] at Site Gallery in Sheffield (28 September 2018-27 January 2019) looked at liquid crystals as enablers of digital culture, thus referencing the idea of medianatures. However, *machines will watch us die*'s investigation did not end at the surface of digital materiality, also exposing intrinsic material processes of which digital decay is an example.

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[22] Conflict Minerals, 24th of March – 22nd of April 2017, Art Catalyst, London. https://www.artscatalyst.org/conflict-minerals

[23] Extract from the exhibition rationale.

[24] *Abandon Normal Devices Festival*, 21st – 24th of September 2017, Castleton, Peak District National Park.
https://www.andfestival.org.uk/events/and-festival-2017/

[25] *Liquid Crystal Display*, 28th of September 2018 – 27th of January 2019, Site Gallery, Sheffield. https://www.sitegallery.org/exhibition/liquid-crystal-display/

Elements of practice emerge throughout the thesis, which is divided into three main chapters. Each chapter analyses different aspects of the curatorial study on digital decay, revealing how the research exhibition represents a valuable model to test out ideas and answer the research question. The methodology and curatorial strategies that were developed for *machines will watch us die* are outlined in the first chapter. The first section of this first chapter introduces the research exhibition as an epistemic methodology that is able to reveal aspects of contemporaneity. It also looks at how the post-medium approach and the idea of contemporaneity feeds into curatorial research, offering a framework for the development of curatorial strategies outlined in the following section.

The need to curatorially address an informed notion of decay built on a temporal notion of materiality, with strategies that distance themselves from immaterial discourses developed around interaction, is here addressed. The potential that the research exhibition embodies as a means to produce new meaning is here outlined, as is the possibility of failure embedded in the concepts of the exhibition as research (Latour, 2010; Sheikh, 2013), here regarded as a positive element which shaped the nature of the events, partaking in the contribution to knowledge delivered curatorially. The methodology also looks at the differences between curating and the curatorial – the curatorial gap (Rogoff, 2012) – as an important element in the post-factum reflection of *machines will watch us die*, as chapter three addresses. This contributed to the evaluation of how the research exhibition was able to visualise key ideas and test methods developed to conceptually explore digital decay.

The curatorial strategies, methods and decisions that were developed are explored in the second section of the first chapter. The various elements of the curatorial set – the research exhibition, the events, the catalogue and funding – are introduced in terms of their functionality within this study. While describing the strategies that were developed to counter the myths of immateriality and interaction, the chapter proceeds to outline *machines will watch us die*'s methods, such as the absent presence of interaction – which is discussed in relation to intra-action – and the convergence of sounds. Both strategies are contextualised within the tendency of the return to authenticity identified by Erica Balsom (2014) and Lyotard's formulation of the technological sublime (1984), which is discussed in the next chapter in relation to the temporal notion of materiality.

With the aim of conceptually exploring digital decay within the coordinates of the material turn, a comprehensive definition of digital materiality was developed by taking into account a variety of elements in chapter two. Beginning with the dematerialization of the art object (1973), *Les Immatériaux* (1985) and more recent developments in the field of media archaeology and media geology, the definition of materiality is processual and is determined by the variety of digital temporalities (among which figure deep time and real-time), addressed through the idea of contemporaneity. Lyotard's sublime is here addressed through the hypothesis that the combination of the themes explored in the exhibition and the curatorial strategies implemented would have generated a sort of unease, which would have facilitated the experience of digital decay.[26] Overall, the chapter demonstrates how a temporal definition of materiality was the most suitable means to reveal digital decay as a material process entangled with the various material and temporal formations of the digital. A consideration of where the exhibition sits within the material/immaterial dichotomy that still populates curating is also outlined here, as a way to acknowledge the variety of approaches that these and the smaller scale exhibitions and festivals outlined above have undertaken.

machines will watch us die was conceived as a platform for research. The relationship between curating and the curatorial and the importance of the curatorial gap within the research exhibition and the events is explored in chapter three. Through the walkthrough and the analysis of the various curatorial elements, it becomes evident how theory and practice have come together to present a materially-oriented notion of digital decay that distances itself from discourses based on immaterial behaviours, preservation strategies and environmental issues. The research methods are here evaluated, presenting a reflection on the set of ideas on which decay was developed, such as a temporal notion of digital materiality, the exhibition as contemporaneity and the artwork as time-machine. The exhibition walkthrough outlines my curatorial intentions and understanding of the concepts in the space, and the ways in which these have been informed by conversations with the audience (which also defined the extent of the curatorial gap). Informal conversations on the themes and curatorial strategies with members of the audience facilitated the post-exhibition reflection on *machines will watch us die*. Some viewers engaged with the exhibition more than others, but as it is the audience that activates the gap (Rogoff, 2012) and the potential of 'failure' (Latour, 2010; Sheikh, 2013), the final chapter of the thesis is dedicated to a discussion on how the methodology worked both in terms of 'doing' and 'disseminating' research.

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[26] Lyotard (1984) also suggests that a feeling of unease, which also emerged from a combination of factors relating to the themes of the exhibition and its curatorial strategies, facilitated the creative experience of *Les Immatériaux*.

Part of the audience was a group of MA Students in Contemporary Curating at Manchester Metropolitan University, whom I invited to evaluate the exhibition. This informal evaluation took place over two stages. In the first instance, I introduced them to the themes and methods of *machines will watch us die*. Afterwards, I gave them a tour of the exhibition and invited them to give feedback on the curatorial project. The ways in which their comments enabled a further reflection on the exhibition, and how this has informed my analysis of practice, is outlined in chapter three. The events which accompanied the exhibition – a symposium, an artist talk and screening and an exhibition tour – further addressed the conceptual framework introduced by the exhibition, and their contribution to the exploration of digital decay is also outlined here.

machines will watch us die is analysed and documented through each chapter from a different perspective: methods, theoretical implications and a reflection on practice. As the thesis and my own curatorial work evolved, the research grew to focus on exploring a materially-oriented notion of digital decay, which led me to rethink curatorial strategies for art addressing the digital through its own materiality. This thesis positions the curatorial, and in particular the research exhibition, as practice-led enquiry into digital decay within contemporaneity. The voice of the curator as witness to the practice, the collaborations with artists, the study of the conceptual framework, the audience and other theorists and curators' work within this context are all elements of the research. This study shows how these aspects interplay to offer insights into how curatorial practice, the research exhibition and events support each other in the conceptual exploration of digital decay as *machines will watch us die*'s contribution to knowledge begins to take shape.

Chapter 1

machines will watch us die: curatorial methodology, strategies, methods

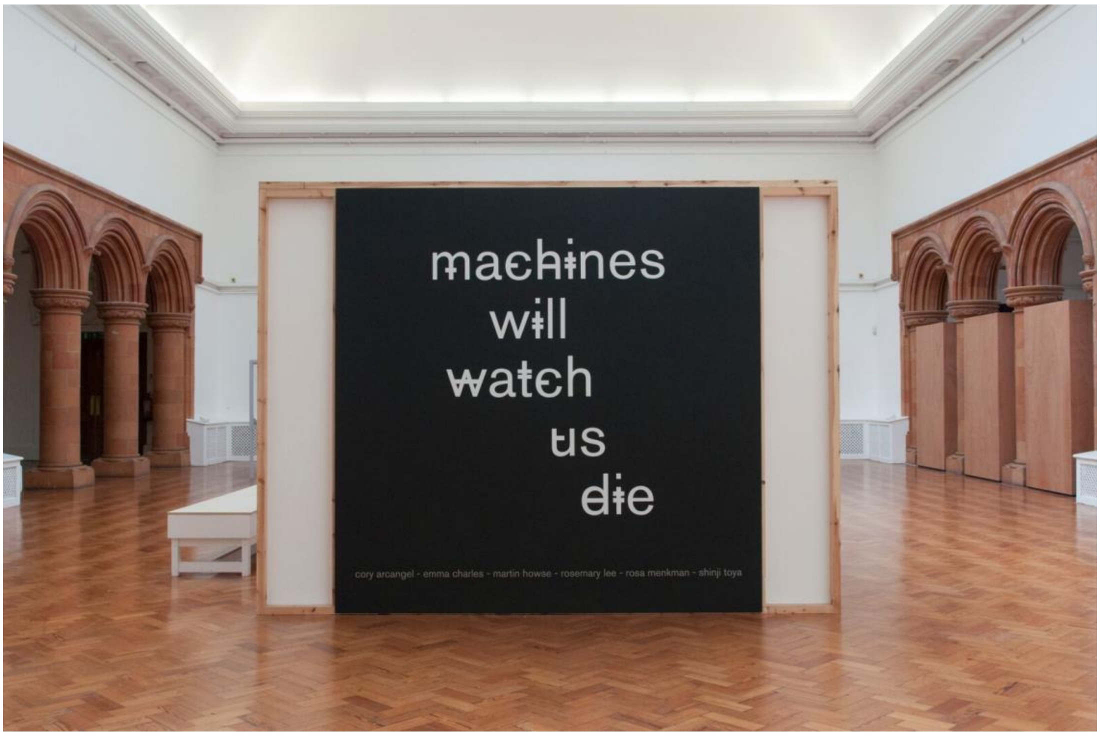
machines
will
watch
us
die
cory arcangel - emma charles - martin howse - rosemary lee - rosa menkman - shinji toya

Figure 1. *machines will watch us die*, exhibition shot, The Holden Gallery, 2018.

1.1. The curatorial as methodology

> '… art and archaeology share a profound understanding … of the primacy of the material in all culture, the overwhelming importance of mere 'matter' and 'stuff' in any attempt to grasp and truly read the cluttered fabric of the world' (Roelstraete, 2009:online).

The curatorial, as a methodology, requires different methods of 'making things public' (Latour, 2005; Latour, 2010; Lind, 2011) for each stage of the project realization. Different elements – the research exhibition, the tour, the artist talk and screening, the symposium and the catalogue – partook in the exploration of digital decay while engaging multiple audiences. *machines will watch us die* fuelled an interdisciplinary discussion between media theory and the curatorial as a way to put forward a materially-oriented approach to curating as a strategy for exploring digital decay. Identified as an epistemic structure (Rogoff, 2012), the curatorial is an ongoing process that does not emphasise the end product, but rather produces a stage for knowledge: 'a public platform that allows people to take part in the processes' (Rugoff in von Bismarck et al., 2012:23).

Defined by O'Neill (2012) as a 'constellation of activities' (2012:55-60), the curatorial comprises the exhibition and other discursive activities, such as screenings, lectures, and workshops. These were criticized in terms of balance and hierarchy by Hoffmann, who proposes the idea of the 'paracuratorial' (2011) to describe all those activities that go beyond exhibition making. The curatorial approach behind *machines will watch us die* was built on Lind (2011), Rogoff (2012), O'Neill (2012) and Von Bismark's (2012) understanding of the practice as an ensemble of 'parallel ways of making art happen and go public' (Lind, 2011:online), rather than creating a divide between the exhibition and other events (Hoffmann, 2011).

Central to the curatorial, the research exhibition provided a space for the representation of issues and themes as well as testing out curatorial strategies. The film screening, accompanied by a talk by artist Emma Charles, was followed by a discussion with the audience. The symposium's aim was that of opening up the themes which emerged from the exhibition, contextualising them within a wider theoretical discourse. An exhibition tour was also organised to further the research and knowledge dissemination through the curator's interpretation of the visual narrative of the exhibition. How these events contributed to the curatorial is outlined in the next section of this chapter, while a reflection on their function is presented in chapter three.

'Making things public' (Latour, 2005) here refers to disseminating a materially-oriented notion of digital decay that led us to ignore the material by-products of digital culture, thus exposing the myths of immateriality (Paul, 2008) and interactivity (Huhtamo, 1995;

Gansing, 2003). Common to both Sheikh (2013) and Latour's (2012) definitions of the exhibition as research is that they both identify a potential in the possibilities of failure,[27] as outlined in the Introduction. In relation to the curatorial, Rogoff also believes that there is a gap – left intentionally or unintentionally – between the 'exhibition's stated aims and its effects in the world' (2012:23), as it is almost inevitable that something gets lost when translating ideas into an exhibition, as chapter three analyses. Where the exhibition is unable to fulfil its aims, 'curating and the curatorial work into one another' (von Bismarck, 2012:31) to ensure the best possible results. The audience's role is here considered integral (Lind and von Bismarck, 2012), as the discursive events, that are part of the curatorial set, furthered the exploration on the main themes and the framework of *machines will watch us die* as well as its evaluation.

The methodology is based on a relational approach to curatorial practice (O'Neill, 2012; Von Bismark and Lind, 2012). All the elements contributing to the research are here considered as a network, which is understood as an ever-evolving set of relationships. The methodology also addresses Graham and Cook's provocation (2010) of rethinking curating in terms of networks of relations. In parallel with Joasia Krysa's questioning of the role of the curator in the digital age (2006) at a time when the hype for immateriality was thriving, the methodology is composed to reveal the ways in which the curatorial can be informed by the material turn of recent years. The term 'turn' is here intended as 'a generative moment in which a new horizon emerges in the process, leaving behind the practice that was its originating point' (Rogoff, 2008:online). Discursive and relational in nature, the theoretical ideas embedded in the curatorial – the post-medium (the radicant, Bourriaud, 2009) and contemporaneity (Cox and Lund, 2016) – responded to the need to rethink curatorial strategies for digital art based on immaterial behaviours that were developed at the turn of the century.

A post-medium approach was adopted to convey the fluid materiality of digital technology within the curatorial. The idea of contemporaneity (Cox and Lund, 2016) was instead incorporated into the methodology as a way to address digital temporalities that are estranged to human beings, such as deep time, within the finite timeframe of the exhibition experience. In this context, *machines will watch us die* became an active space that 'can change our imagination and our perception […] by offering parallel ways of grasping reality or trying to deal with reality' (Lind in Milliard, C. et al., 2016:142). It aspired to do so by presenting an idea of decay which revolves around the hidden material and temporal coordinates of digital culture, thus inviting the audience to revisit their conception and involvement with digital technology. The temporal notion of digital materiality is in fact the foundation on which the curatorial study of digital decay is based. This idea was fundamental in revealing digital decay as a systemic condition of the digital within contemporaneity, which is why curatorial research was carried out by embedding insights from the field of media archaeology into the exhibition-as-research framework. It was developed from the fields of media archaeology and curating in order to take into consideration how the artworks' materialities (rather than their media) address digital decay, as the next chapter explores.

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[27] Latour (2010) also believes that the constraints dealt with within a curatorial project make the research outcome much stronger than if it was written in a paper, as in an exhibition new possibilities can be explored with a greater degree of freedom.

The post-medium approach problematized the opposition between the material and the immaterial and called for the same return to materials found within theories of media archaeology and the material turn. In material studies, the distinction between matter, medium, materiality and materials is also confusing (Ingold, 2007), and to avoid any ambiguity and produce a clear account of digital decay, the exhibition narrative was developed around a post-medium approach. 'Post' is here intended as Geoff Cox (2015) discusses it regarding the label of post-digital; a prefix that symbolises the necessity to rethink the concept in question in order to expose its cultural effects. As digital decay emerged through artworks which explore the contemporaneity of digital materials, a post-medium approach was able to address the digital in both its material and immaterial manifestations, and the ways in which they intertwine.

Graham Cook and Beryl Graham state that the:

> 'trouble with proposing a description not based on media is that there is a tendency to lapse back into the tradition of art aesthetics that is heavily based on what things look like rather than on how they work, which might lead to mistaken categorization...' (2010:5-6).

This is not entirely true, as a post-medium approach allows the curatorial to go past the divide and consider all art as contemporary art. In addition, the distinction between immaterial and material processes in digital aesthetics is polluted by the myths of immateriality (Paul, 2008) and interactivity (Huhtamo, 1996; and Gansing, 2003) emphasise.

> 'If we are to consider the issue of the physical properties of the work of new media art rather than its conventions or how it behaves, we would be continually chasing a vapour trail because the physical properties of new media are so mutable, emerging, evolving, being upgraded, and becoming defunct.' (Cook and Graham, 2010:35)

However, they fail to acknowledge that this is also true for immaterial behaviours, as they too are subjected to the logic of planned obsolescence. Behind the medium, there aren't just behaviours but also materiality.

In the 1990s and early 2000s, curators responded to the immaterial behaviours of new media art as outlined in the Introduction. In the contemporary present, it is timely to rethink curatorial approaches in order to address the materiality of art that is entangled with digital culture. Behaviours of technology have influenced curatorial methods for new media in the same way that they have influenced the curatorial in its relational structure. In this context, the radicant (Bourriaud, 2009) allows us to go past these behaviours and curatorially explore digital decay through a temporal notion of digital materiality. Like Lyotard in *Les Immatériaux* (1985), Nicolas Bourriaud (1998) recognised that new technologies continue to have a great impact on culture. Along the same lines, Geoff Cox explains that the term contemporaneity was born in art discourses to address the changes that the digital brought to the 'structures of temporalization' (2015:151-162), further enhancing the dependency between material and time also stressed in the next chapter. For Bourriaud, 'the main effects of the computer revolution are visible today among artists who do not use computers' (1998:67). If applied to curating digital decay, this could be translated into emphasising materiality rather than media and their immaterial behaviours, as outlined through the curatorial strategies explored in the next section.

machines will watch us die's exploration of digital decay required an approach that was able to curatorially address the temporal notion of digital materiality on which the reconceptualization of decay was based. Bourriaud's post-medium approach, the radicant (2009) shares an affinity with the discursive and relational nature of the curatorial. With the radicant, Bourriaud (2009) argues that the process of exploring new materialities cannot be tied to a modernist, and therefore pre-digital notion of medium-specificity. It is this sensibility towards materiality, together with an understanding of how the digital is 'relationally' impacting on society,[28] that leads to my adoption of the radicant as the post-medium approach to curating digital decay. The radicant is also useful in addressing digital temporalities, as Bourriaud (1998, 2009), Cox and Lund (2016) all believe that the digital has brought changes to the ways in which we understand time.

With the radicant, the methodology goes beyond the medium-based attitude that defines widely recognized curating strategies for new media behaviours that are more suitable to preservation discourses, such as Cook and Graham's (2010) and Paul's media literacy (2008). Although Paul (2008) believes that both the curator and the viewer need specific knowledge of the medium to obtain a comprehensive account of the artwork, in *machines will watch us die* the conventional medium-artwork association was rethought by focusing on the materiality of the artwork rather than the medium. The media literacy she advocates is not relevant here, because media technology is critically explored by artists who are able to go past the medium in order to show the material limitations of digital culture.

The discrepancy between layers of temporalities – between the material ecologies of decay and the way in which digital innovations have progressed – enabled the exhibition to address digital decay in the present through the 'forgotten histories of the present […] that resonates in the present, although usually out of sight' (Smith, 2015:147). In this context, 'forgotten'[29] refers to the vibrant materialities of digital culture. Decay was thus explored by focusing on the past, present and future of the materials that are integral to the devices' functioning, leading to an analysis of digital decay through different layers of temporalities. To explore digital decay through the convergence of materialities and temporalities, the audience was required to develop a certain time-flexibility (Gillick, 1996) during their experience of the exhibition. Following this logic, the viewer was invited to respond in real-time to the pasts, presents and futures embedded in the contemporaneity of the artworks' materialities. The works' relation to time allowed them to experience an otherwise 'invisible scenario' (Gillick, 1996), analogous to the purpose of the curatorial outlined by Lind (2016) and Smith (2015) below.

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[28] Bourriaud published 'Relational Aesthetics' in 1998.

[29] It also refers to socio-political and environmental situations, often located outside of the Western world.

Terry Smith's definition of the purpose of curating as 'to exhibit (in the broad sense of show, offer, enable the experience of) contemporaneity as these are manifest in art present, past and multitemporal' (2012:29) was applied to reveal the intertwined temporalities of decaying digital materialities. In relation to human beings, digital decay is a material process that stretches beyond human histories. Due to its processual nature, it becomes visible where nature and technology come together as medianatures (Parikka, 2012), as the next chapter addresses. The connections between temporalities and durations, the material and immateriality were addressed by considering the assumption that the audiences' own understandings of the digital are based on their everyday use of technology.

The diverse temporalities were articulated through the artists' selection of materials, the subjects of their work, the written material, the title and sound. This allowed an exploration of decay through obsolescence, geo-physical properties of the digital, immaterial data and the use of technology in today's society. Adrian Heathfield's definition of durational aesthetics (2009) was here recontextualised to link layers of digital temporalities and durations within contemporaneity. In the context of the exhibition, duration enabled us:

> 'access to other temporalities: to times that will not submit to Western culture's linear, progressive metanarratives, its orders of commodification; to the times of excluded or marginalized identities and lives; to times as they are felt in diverse bodies. Time, then, as plenitude: heterogeneous, informal, and multi-faceted.' (Heathfield 2009:23)

This notion fits within both the conceptual framework and the methodology: it provides a critique of capitalism and linear historicity, while also putting forward a multitemporal idea of time that is parallel to the notion of contemporaneity (Cox and Lund, 2016). It also further explores the engagement between the works, the audience and the exhibition.[30] In other words, the exhibition opened up new understandings of digital culture beyond immateriality, as the audience was introduced to nonhuman durations and temporalities through the works, as the next section of this chapter outlines.

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[30] In 'The past is the present, it's the future too' (2014), a study on the temporal turn in contemporary art practice, Ross defines the act of observing a work of art as something that is

The idea of duration contributed to the interpretation of the works and to the development of the narrative. Its experience was defined by the relationship with non-interactive and non-immaterial technology. It also questioned the false impression that digital decay is an interminable process inscribed only in deep time. However, it is not the scope of this chapter to provide a survey on the notion of duration[31], as it is here used only to describe the moment in time in which the viewer encounters the temporal materialities embedded in digital decay and their lengths. The concept of duration is traditionally understood as an anthropocentric notion.[32] In *machines will watch us die*, however, it made possible the crossing of the boundaries between the human and the nonhuman, the audiences' timescales and digital temporalities.

In curatorial practice, no matter how post-anthropocentric the theme of the exhibition, the audience, and therefore human time, have to be directly addressed. However, Parikka believes that the contemporary is somehow detached from human-only time as he defines it as:

> 'a multitemporal reality where slowness entangles with the technological microtemporalities; time-critical media that are of time, but more importantly, manipulate the time-axis, which (in)forms our horizons of perception, ethics,

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inseparable from the idea of duration as continuance in time. She asserts that contemporary art inscribes the spectator in different experiences of time: 'not only endlessness but also entropy, condensation or acceleration' (2014:3).

[31] Traditionally associated with live art, in the exhibition it was also applied to performative, non-human matter as a way to experience the durations of digital decay in its heterogeneity – geological duration, real time, acceleration, interactivity, slowness and immediacy – in order to strengthen the conceptual exploration of decay in relation to contemporaneity.

[32] Bergson (1899) defined duration as something that is of the body and can be experienced. Henry Bergson's critique of clock time through the concept of duration – 'duree that is quantitatively indivisible yet always dividing itself qualitatively into past and present as the past incessantly prolongs itself into the present so that the present may pass cannot be applied to the digital" (Ross, 2014:23) – has become outmoded because of the shift from industrial clock time to the 24/7 globalized network time that occurred in the 1990s (Shalson, 2012). However, the notion of duration in the exhibition is not to be understood only as a critique of fragmented time or acceleration brought by the advent of the digital revolution.

> affect and more. Hence the contemporary becomes detached from human-only time.' (2016:9)

This quote summarises the temporalities embedded in the narrative but leaves out the audience's experience of time within the exhibition. *machines will watch us die* revealed the contemporaneity of digital decay through the encounter between the temporal layers embedded in the artworks' materiality and those introduced by the audience. Digital decay was explored through feelings of nostalgia for the promises of early digital culture, the real-time machinic operations that enable the existence of information in human history, and a sense of unease related to speculations on future fossils and failures of technological histories.

One of the aims of *machines will watch us die* was that of creating a feeling of *unease* which would have facilitated the viewers' experiences of digital decay:

> 'a sense of newness and amazement – not to simply affirm the seductive power of the new – but rather to trigger a 'reflexive unease' in our relation to things that we already dimly sense.' (Birnbaum and Wallenstein, 2016:online)

Presented as a show on digital art, the exhibition lacked interactivity and merged sounds and temporalities in the space to generate an uncanny feeling analogue to Lyotards' inquietude[33] (Mackay in Broeckmann and Hui, 2015:233). In *machines will watch us die*, the unease was meant to facilitate the viewer's experience of how the deep time of digital decay interlocks with the human histories within the context of contemporaneity, as addressed in the next chapter.

1.2. Curatorial methods and strategies

1.2.1. The research exhibition

The exhibition as research was deemed the appropriate method to question the abstractions of digital culture that emerge when exploring digital decay through failure, consumerism, obsolescence and the physical infrastructure of the Internet. When considering the exhibition as a form of research – a tool for 'investigating something other than art, for presenting ideas' (Sheikh, 2015:34) – the artworks and exhibition narrative become the vehicles through which the idea of digital decay can be experienced in its contemporaneity. Through its different layers, the research exhibition is able to visualise the complex temporalities of digital decay, as well as experimenting with curatorial strategies. Within this framework, the absent presence of interaction, the convergence of sounds and the artwork as time machine were deployed as curatorial strategies to reveal digital decay. The exhibition immersed the viewer in a presupposed digital environment where interactivity, the immediacy of the Internet, and the immaterial take on the digital have been removed in favour of the apparently eternal feeling that the experience of deep time provokes, only to invite the viewer to respond to a too-good-to-be-true conception of the digital. The return to analogue was here reinvented through the artworks as a return to the pre-interactive condition that is part of digital culture's material ecology.

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[33] In Les Immatériaux (1985), this feeling emphasised Lyotard's concerns about the acceleration of culture caused by the advent of the digital (Mackay in Broeckmann and Hui, 2015:233).

1.2.1.1. The absent presence of interaction in *machines will watch us die*

Understandings of the concepts of medium and materiality have been driven by the myth of immateriality. Interactivity, connectivity and computability – new media behaviours defined by curator Steve Dietz (1999) – acted as the foundation of Beryl Graham and Sarah Cook's 'Rethinking Curating: Art after New Media' (2010), a seminal volume that provided clarity on the most widely adopted approaches to curating new media art. The book labels curatorial practice and artistic methodologies for 'new media' through a medium-based approach. It further reinforces the myth of immateriality as their analysis is based on understanding how behaviours of technology can be migrated – to ensure the longevity of data – to newer technologies, without taking into consideration the material processes embedded in digital culture.

Cook and Graham propose that the curation of new media artworks should be based on the behaviours, rather than the materiality, which define the medium, and that there is the need to reconsider curatorial approaches following the ways in which behaviours have shaped new media art's production, distribution and preservation. For *machines will watch us die*, such insistence on immaterial behaviours would not have allowed the curatorial to reveal the inherent materiality of digital technology. The exhibition's exploration of digital decay as a material process belonging to human and nonhuman temporalities would have been incomplete if only curatorial strategies based on immaterial behaviours and their relative durations were employed.

They recognise that it is necessary to define new curatorial strategies for digital art, and that the role of the curator should consequently adapt to new ways of working in 'exhibiting and interpretative events […] online and real space […] content and contexts' (2010:168). As there is a distinction between curatorial ways of working in the digital age and curatorial strategies for digital art, their approach contributes to the confusion embodied by the myth of immateriality and falls short of acknowledging the material turn, which had already emerged at the time when the book was released (2010). Parallel to the exhibition's exploration of digital decay goes the proposition of rethinking curatorial strategies for new media after the material turn. This implies that the curation of the exhibition emphasised the artworks' material processes – which are addressed through a temporal notion of materiality – rather than their behaviours.

Interactivity is explored by Cook and Graham as a valuable behaviour in relation to rethinking curating, the role of the curator and the audience's experience. In his analysis of Cook and Graham's understanding of interactivity, Nathaniel Stern (2016) explains that in their view, interaction means 'acting upon each other' (Stern in Paul, 2016:325). He also argues that such an understanding would interfere with the experience of the artwork which might come across merely as an interactive tool (2016). The emphasis on the viewer as a human entity interacting with – and upon – the work assigns an anthropocentric focus to the discussion which the exhibition tried to avoid beginning with its title. An attention to human beings as users and consumers of interaction and immaterial behaviours also clashes with the temporal definition of digital materiality as vibrant matter (Bennett, 2010) and medianatures (Parikka, 2012), explored in chapter two. As a result – and following the development of a curatorial thinking influenced by Barad's idea of intra-action (2007) – the exhibition narrative avoided accentuating immaterial interactions.

Barad explains the idea of interaction (inter: amongst) as a relationship between bodies that maintain a level of independence. In this relationship responsibilities are deflected. Instead, intra-action (intra: within) depicts a relationship in which entities intra-act in co-constitutive ways, and the ability to act emerges from within the relationship. It is an idea that enables us to think anew our relationship with other entities, whether they are people, matter, nature or narratives. This concept connects with the idea of the curatorial as constellation and is also intrinsic to the entanglement of temporalities and materialities that define the material process of digital decay. In the exhibition, the notion of interaction was rethought beyond the oppositional relationship between the human being and the passive technological device.

Introducing the concept of intra-action to the curatorial also opens up enquiries in relation to the role of the curator and how it can be repositioned within a relational environment for which 'curators, artists, contributors, supporters and exhibition attendees [share] responsibilities for the experiences that the exhibition offers' (Kontturi, Grande and Štefková, 2018:online). Barad's idea of intra-action could offer new insights in addressing the set of relationships between the viewer and the artwork, reconsidering its hierarchies and levels of engagements, as the exhibition narrative encouraged the viewers to think about the digital not as a tool at their disposal. However, the nature of this study does not offer the space to discuss the methodological implications of rethinking the curatorial in terms of intra-acting entities.

Considering that museums often generate a passive response, the intentional lack of interaction was here considered as a trigger towards revealing digital decay's effect in the contemporary condition. Developed as a strategy for the imagined audience to reposition humankind within nonhuman and universal coordinates, the idea of intra-action – for which responsibilities are distributed – would have, theoretically, made them question how digital decay is defining our technological relationship to the world. The exhibition was intended as a phenomenon in which 'the human and the nonhuman, the material and the discursive, the conceptual and the phenomenal entangle and intra-act' (Kontturi, Grande and Štefková, 2018: online). This was the rationale behind *machines will watch us die*, which blurred the boundaries between nature, technology and human beings. Such an approach also responded to new materialism's tendency to defy linear time and the subject-object dichotomy common to both the exhibition's theme and its conceptual framework. By subtracting interaction from the narrative, the viewers were thus exposed to posthuman technological histories.

This approach is contextualized within the tendency of curating exhibitions for which an apparent lack of engagement with digital technology becomes a tool for investigating the effects of the digital on culture. Erika Balsom (2014) defines this tendency as the desire for the return of the authentic object[34] as a way to critique the production and distribution of digital information[35]. This 'anachronism of the authentic' is defined as a reaction to shifts with new media technologies at their core' (Balsom, 2014:72) and as a strategy which:

> 'repudiate[s] any retreat into a reified and glorified past, while also proposing a different relationship to history that is most often found in contemporary manifestations of technocapitalism.' (Balsom, 2014:74-75)

It can be argued that this return to the object's authenticity – parallel to the return to materials in *machines will watch us die* – is also a strategy to invite the viewer to welcome that unease and search for the implicit discourses included in the exhibition. Balsom recalls the 'social and political relations [that] may be embedded in the materiality of things' (2014:75). However, the methodology also argues that there is no need to go back to archaic and analogue technologies in order to explore how the digital is affecting the contemporary, because both the archaic and the analogue are elements that are present in digital materiality. A media archaeological approach to curating also implies that the material's temporalities of the digital stretch from an archaic geological past to the distant future.

1.2.1.2. Sound

Sound contributed to exploring the complex nature of digital decay. The convergence of sounds interfered with the viewers' experience of the exhibition, making it difficult for them to think and digest the ideas embedded in the show during their visit.[36] It thus encouraged a post-exhibition reflection on the themes of *machines will watch us die*. At the same time, it also contributed to the sense of unease that pervaded the exhibition. Sound could not be tuned out at any stage of the gallery visit. It interfered with the audience's thinking and merged the experience of each work to the whole exhibition narrative. By taking out the singularity of each work, the convergence of sounds also prevented the exhibition experience from becoming a sequential work-after-work exploration of digital decay. The use of headphones, for example, would have separated the experience of Toya's and Menkman's works from the rest of the exhibition narrative. It also paralleled the ways in which the overwhelming presence of visual text defines our experience of digital culture.[37] The convergence of sounds that made up the 'soundtrack' of the exhibition facilitated the experience of different temporal and material dimensions, as chapter three details. From the nostalgia-fuelled 1980s of Super Mario and the heavy noises of a data centre merging into the gallery from the film space, to the mechanical voice emerging from the real-time Cloud questioning the future of human memories, the exhibition also hoped to facilitate different interpretations of digital decay depending on the audience's personal response to its soundtrack.

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[34] The association that Balsom individuates between the singularity of the objects exhibited in *dOCUMENTA (13)* and time is defined as something 'palpable' for the viewer to experience in the show.

[35] For Balsom (2014) this is a tendency that mirrors the critiques of modernity and technology (in relation to shifts in production and distribution) in the late-nineteenth and early-twentieth centuries, such as 'Max Weber's thesis that modernity constitutes the disenchantment of the world or Walter Benjamin's notion of decay of the aura' (Balsom, 2014:72).

[36] For a recording of the exhibition walkthrough, please visit: www.patrizia-costantin.com

1.2.1.3. The artwork as time machine

As a strategy to make the convergence of temporalities and materialities work, the exhibition narrative was developed around the notion of the artwork as time machine (Huhtamo, 1995). Building on Huhtamo (1995), such a conception of the artwork invites the viewer to become aware of the different timescales of digital culture, introducing them to the cyclical idea of time, while also connecting the various timescales of contemporaneity. He proposes:

> 'The user is invited to travel, but not simply up and down the shaft of time, as if encapsulated in a chronographic elevator. Instead, the traveller navigates in a much more complex realm of past-present and present-past, in which layers of time overlap and associate with each other; the conception of time is cyclical rather than simply linear.' (Huhtamo, 1995:online)

Understood as time machines, the artworks enabled the narrative to theoretically merge the different temporalities participating in the process of digital decay. Useful in grasping the ecology that digital materials undergo, such a conception of the artwork was explored as the means that could establish a connection between the audience's temporality and the decaying digital materiality that operates over a variety of durations.

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[37] This has been mapped in terms of speed, disappearance and panic by Paul Virilio in 'Art As Far as the Eye Can See' (2007).

These would be impossible to materialize within the limited timeframe of an exhibition, if it weren't for the contemporaneity of digital decay overlapping different timescales. The artwork as time machine brings a variety of temporalities into the present and gives comparisons between different temporalities as a way to show digital decay in the contemporary exhibition. Useful in addressing materials' historicity in a non-linear way, the artwork recaptured the 'past' of the digital (its geological materials, outmoded devices and obsolete software) in the present, to show glimpses of how decaying digital materiality will shape the future.

> 'Thus there is a spatial and phenomenological horizon for contemporaneity within the exhibition: it is a discursive, epistemological, and dramaturgical space in which various kinds of temporality may be produced or shown to coexist. Enabling viewers to experience contemporaneity in an exhibition setting (taking "exhibition" in the broad sense mentioned, and "setting" to mean any appropriate situated context) would, through this reading, be the curatorial equivalent of making contemporaneity visible in the case of art and of capturing it in writing for publication in the case of criticism and history.' (Smith, 2012:30)

The different simultaneous and coexisting temporalities of digital materiality, which are explored in the next chapter, were shown through the works that made visible the contemporaneity of digital decay in the exhibition: not just deep time, or the geological timescale of digital decay, but also a conflation of temporalities, through which decay manifested, was very much present. Deep time could strike as an eternal moment, but once we go past the anthropocentric construction of time, it becomes clear that geological time is entangled with the functioning of the digital. The length of the viewer's experience of the show, and the durations embedded in the temporal materialities of the works, came together to define the exhibition as a representation of the contemporaneity of digital decay. A curatorial reading of duration was used to address the diverse temporalities that the exhibition explored in relation to the multi-temporal contemporary, from post-industrial acceleration to ecological cycles, so that alternative cultural perspectives could emerge through the experience of the exhibition.

1.2.1.4. The selection process of the artworks

The artworks were considered independently from their medium-based classification as new media or digital art. The selection process of the works reveals an understanding of the process-based nature of materiality beyond interactivity, immateriality and human action. The artworks were considered as 'epistemologically active, [allowing us] to perceive what is knowable or even unknowable' (Cox and Lund, 2016:29). In its both knowable and unknowable stages, the material process of digital decay is what the research exhibition set out to explore. By looking 'beneath the shiny interface of digital culture',[38] such a process began to emerge.

Decisions were also taken to stop *machines will watch us die* from being considered as a standalone work where the theme becomes more important than the works.[39] At all stages of the research, the works were in fact considered fundamental, as it was through the works themselves that the variety of materialities and temporalities embedded in digital decay became manifested. The artworks contributed to broadening the understanding of the theoretical framework and participated in the gap in unexpected ways. The written material offered relevant information to contextualise the exhibition within the research, but ultimately the works and the curatorial strategies adopted were trusted with possessing the ability to introduce the audience to a materially-oriented notion of digital decay.

Usually concealed within the device, or within boxes built specifically for an exhibition, in the selection process digital materiality was approached as the means to reveal which processes and phenomena 'happen' inside the devices.[40] In art practice this is a methodology often associated with circuit bending. Its scope is that of 'exploring and unravelling the blackboxed technological layer of the device that is usually concealed' (Hertz, 2012:204). Curators also tend to hide the technological device on which the artwork runs, because these are materials that are not deemed to comply with aesthetic values. Thinking about digital materials as the raw metals and minerals that enable information to travel was a strategy that allowed the narrative to reveal what otherwise would remain obscured. When applying this idea to the exhibition, new ways to address the digital emerged. An example of this was Martin Howse's installation *Test Execution*

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[38] Extract from the exhibition rationale

[39] *Les Immatériaux* (1985), due to its philosophical nature, turned out to be one of those grand narratives that Lyotard already declared dead in 'The Postmodern Condition: a Report on Knowledge' (1979). To avoid the risk of organising a survey – or a grand narrative – digital materiality is addressed in the exhibition in a similar manner to *Les Immatériaux* (1985), but it is approached without showing its interactive behaviour and immaterial semantics.

[40] This approach is contextualised within the opening of the blackbox strategy defined by Michael Goddard (2014).

Host. The work, a primitive Turing machine, revealed the geological nature of digital culture, and it was installed in a box which stopped the viewer from interacting with the computer. Showing the raw material of information technology whilst distancing it from the viewer, it confronted the audience with thinking about what lies behind the interface of the devices they use daily.

1.2.2. The events

The exhibition tour, the talk and screening, and the symposium played an important role within the curatorial, tapping into slightly different areas and addressing different kinds of audiences. The events brought artists, theorists and audience members together to participate and engage with the research exhibition, and facilitated a collective conversation on digital materiality, media archaeology as methodology and the exhibition as research. They were organised to allow the audience the opportunity to further explore *machines will watch us die* and meet some of the artists and other theorists and practitioners whose fields interlink with the conceptual framework of this study.

The awareness that some of the key ideas might not have translated into practice was also a reason for organising the events. They thus provided me with a platform to test my knowledge, answer questions, contextualise and evaluate my approach to digital decay before writing the final chapter. An invitation to participate in all the events was promoted through social media and was included in the exhibition publicity material (press release, flyers and social media posts). The exhibition opening was also listed as one on the events. As mentioned earlier in this chapter, the events are analysed in chapter three. What follows outlines the functionality of each event in relation to the curatorial study.

1.2.2.1. The exhibition tour

The exhibition tour was organised to disseminate my curatorial vision for the exhibition. If made too explicit in the written material accompanying the exhibition, it could have limited the viewers' own experiences and opinions. The tour instead gave me the opportunity to discuss the themes and artworks featured in the exhibition together with the audience. Led by myself on the 19th of April 2018, it was the first public event organised as part of *machines will watch us die*. It included a talk – an introduction to the key ideas and themes of the research – and a walkthrough which represented the exhibition experience I envisioned. I invited the participants to ask questions at any time as I wanted to understand which sections of the exhibitions captivated their attention the most and why. I also wanted to facilitate a conversation rather than just presenting them with my views on the subject.

1.2.2.2. The artist talk and screening: Emma Charles

The event with Emma Charles gave the audience and myself the opportunity to discuss with the artist her contribution to the exhibition, potentially opening up the work in a dynamic way. This was an occasion to expand on the notion of digital materiality in Charles' practice as well as exploring how the latter is shaping her enquiry into the contemporaneity of digital culture. Extracts from a previous work *White Mountain* (2016), as well as an excerpt from *When Objects Dream*, an upcoming film co-directed with Ben James, were shown.

1.2.2.3. The symposium

The closing event, 'the symposium: an exploration of the debris of digital culture', was organised to gather contributions responding to the main themes of *machines will watch us die* that otherwise would not have been embedded in the research due to the limitations related to a PhD. The participants were selected through a call for papers. Steven Gartside was invited to participate as well as Michael Goddard, who was the keynote speaker. The aim of the symposium was that of contextualizing the exhibition within wider discourses as well as disseminating its conceptual framework. It also merged theoretical and practice-led perspectives on digital decay, digital materiality, deep time, agency, obsolescence, media archaeology and history of media.

1.2.3. The catalogue, the exhibition guide and the flyer[41]

The theoretical framework that informed and contextualised the curatorial strategies and the main themes of *machines will watch us die* were not made explicit in the written material that accompanied the exhibition. As addressed in the walkthrough in chapter three, I wanted the audience to visually encounter the concepts on which the research exhibition was based through the artists interpretations of digital decay. If these concepts were present in the rationale and other written material, they would have perhaps made the exhibition inaccessible and too academic.

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[41] These can be accessed in the online portfolio at www.patrizia-costantin.com

The catalogue and an exhibition guide were designed to engage with and reach a wider audience, both during and beyond the duration of the exhibition. The publication expands on ideas of digital decay, machinic vision and obsolescence from a variety of perspectives, including the curatorial, art practice, science-fiction and media studies. It offered extra content for viewers who wished to know more about *machines will watch us die*. Ultimately, it provided them with the possibility of further exploring the notion of digital decay beyond the curatorial as the catalogue is multi-disciplinary in nature. It featured essays by myself and Abelardo Gil-Fournier, a short story by Cedric Smarts, and an interview with participating artists Rosemary Lee and Martin Howse.

The catalogue, which was available for free and designed also as a post-exhibition element, linked the exhibition to the events: the tour, Emma Charles' talk and screening, the symposium. These created a space for discussion and enabled further research to be undertaken, as I was able to discuss the conceptual framework and the curatorial gap with the artists, symposium speakers and the audience. Helena Gregory, an MA student in Design and Art Direction who is also co-founder of Chaosmos Studio, designed the catalogue as part of their professional platform unit. It was produced in-house to keep costs at a minimum and guarantee that the catalogue was free.

The exhibition guide included the rationale, a short description of the works and artists' biographies. It targeted the kind of audiences that enjoy reading about a work while in the gallery. Information about each work was minimal as I wanted the exhibition guide to introduce it without vastly influencing the audience's experience and their interpretation. The flyer was designed by Dan James at Birthday Studio and featured an original typeface designed specifically by James for the exhibition. As well as providing a description of the exhibition, it listed all the events, acting as publicity material. In addition, a press release detailing the exhibition and relative events was sent out through the Holden Gallery mailing list, which also included artists and curator biographies.

1.2.4. Funding

The symposium was supported by the Postgraduate Centre for Arts and Humanities (PAHC), Manchester Metropolitan University. Emma Charles' artist talk and screening was supported by the Holden Gallery. The Holden Gallery's limited budget typically covers artists' fees, delivery and the insurance costs of the artworks, opening night refreshments and materials for the install. It does not generally cover production costs for newly commissioned works.

Martin Howse and I applied to the Elephant Trust for funding in order to receive a contribution towards the production of *Test Execution Host*. The bid was unsuccessful, but I decided to put aside part of the budget and work out a possible way to produce the work. The artist and I had several discussions on how the work could be produced and installed on a budget, while still ensuring a high-quality result. It was also necessary for Howse to come and install the work himself, which meant that more than 1/3 of the budget for *Test Execution Host* went into travel and expenses. I obtained an old model of a computer tower and monitor free of charge, which helped to reduce costs. The box inside which the work was installed was repurposed from a previous exhibition, and I worked with gallery technicians to find the materials to build the table. They also modified the box and cut out the two windows. The remaining 2/3 of the budget for this particular work covered the technical equipment with which the artist built the primitive Turing machine. To limit costs, I drove us to collect rocks and minerals from a local quarry. Together with the reference to Turing, who is one of the leading figures in Manchester's technological history, locally sourced geological materials enhanced the site-specific nature of the work, which I believe facilitated audience engagement with digital materiality.

The work commissioned for the Holden Gallery was inspired by a previous version of *Test Execution Host* that Howse built in prototype form for Perte de Signal, Montreal (2016). The two versions look quite dissimilar as they respond to different gallery spaces. For the Holden Gallery, the sense of workshop and lab-style features, that denote Howse's work, were maintained by installing the work inside a box. However, at Perte de Signal the work was not enclosed in a controlled environment as the space was dark and allowed the artist to translate a sci-fi sensibility to the installation. This was not crucial in relation to the themes of *machines will watch us die*, thus the work was installed differently. Also, it would have been too expensive to recreate a similar environment in a Victorian gallery space and there would have been issues in terms of health and safety due to the presence of cyanotype liquid.

The funding bid for Rosemary Lee's work, *Molten Media*, was successful, and funding was awarded to cover the production and the artist's expenses. The money was awarded by Statens Kunstfond, Denmark. *Molten Media* was then produced from a version of the work made by the artist in 2013. The award covered all costs in terms of artist fee, travel and accommodation and delivery cost. The work was installed inside two vitrines made by The Holden Gallery technicians upon Lee's request.

Initially, I also wanted to include *Mineral Vision* (2015) by Abelardo Gil-Fournier. The original work is located in Madrid and is too delicate to be shipped. The work explores the invisible yet fragile materiality of information by establishing a connection within the audience and copper dust, a fragile material that allows data to travel. We applied to the Embajada de España en Reino Unido and to Acción Cultural Española for funding. Unfortunately, the first application was rejected, and the latter only awarded us part of the amount requested, a sum which was insufficient for producing the work.

The participation of Arcangel, Menkman and Toya was straightforward as they responded to the rationale. Working with Howse, Lee and Fournier on different levels, instead, influenced my curatorial vision and contributed to the shift from the environmental to the material in the research. Their artistic practice is also research-based[42] and their work has often been referred to in relation to the media archaeological debate. Martin Howse's projects *Earthcodes* (2015) and *Crystal World* (2012, in collaboration with Jonathan Kemp and Ryan Jordan) are used as case studies by Parikka in his chapter 'Psychogeophysics of Technology', in 'A Geology of Media' (2015). Fournier is part of the Archaeologies of Media Technology Research Group (AMT) at the Winchester School of Art, and Rosemary Lee is a media theorist whose practice crosses media geology, posthumanism and hybrid ecology. Emma Charles has also collaborated with Parikka for *White Mountain* (2016), a work which was not featured in the exhibition but was shown at the artist talk. Discussing *machines will watch us die* with Charles in the period of time leading up to the exhibition also contributed to the decision of adopting a temporal notion of materiality. Her practice focuses on the materiality of digital technology in a variety of ways, connecting digital decay to the natural world and contemporaneity in terms of materiality rather than environmental issues. The enquiry on digital decay linked notions of materiality to deep time, thus relating decay to contemporaneity without necessarily falling into the realm of environmental issues, as the next chapter explores.

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[42] Martin Howse refers to *Test Execution Host* as 'one part of an ongoing body of work and research (Dissolutions) commenced in Quebec in 2016 and examining the connections between geo-bio-logical extraction and the execution and subsequent dismemberment of software and of all material and psychic bodies.' (Howse, 2017:online)

Chapter 2

Exploring digital decay:

a temporal notion of digital materiality and the contemporary discourse

In the curatorial process for *machines will watch us die*, materiality and temporality are seen as co-dependent concepts. The awareness that digital materiality is processual in nature has influenced the exploration of digital decay in both theory and practice, as well as theoretical readings on digital temporalities, the selection and interpretation of the works and the exhibition narrative. Digital temporalities, spanning from deep time to the immediacy of information exchanges, were embedded in the exhibition in terms of contemporaneity (Cox and Lund, 2016), linking the exhibition narrative to a non-linear understanding of time, progress and history. This also responded to Terry Smith's definition of curating as exhibiting contemporaneity (2015:15), as seen in the previous chapter. Looking at digital materiality in relation to new materialist studies (Barad, 2007; Bennett, 2009) also informed the development of curatorial strategies in terms of how the audience would respond to a temporal notion of digital materiality and, by extension, the contemporaneity of digital decay. As digital decay is defined as a material process entangled with micro and macro temporalities, the material and the immaterial, a specific understanding of materiality was developed to enable a thorough exploration of digital decay. This chapter discusses the curatorial thinking behind *machines will watch us die* that led to the adoption of a temporal definition of materiality as a means to carry out an in-depth exploration of digital decay.

At the turn of the 21st century, a time when the enthusiasm for interaction was booming and the Internet was promoted as a solution for all of humanity's problems (Huhtamo, 1995), curators (Ippolito, 2003; Dietz, 1999; Cook and Graham; 2010) explored digital technology in art practice through their medium-based immaterial behaviours, as chapter one details. Discourses on how immateriality was defining curatorial practice in terms of networking (Terranova, 2004; Krysa, 2006; Paul, 2006, Krysa, 2013) also appeared. In *machines will watch us die,* however, the emphasis on immateriality was reinterpreted through the idea of contemporaneity. The adoption of an idea of materiality as dynamic, unstable, unpredictable and subject to contingency[43] was used to overcome the confusion incorporated into the notion of immateriality, here intended as a characteristic of a broader notion of digital materiality and not as a separate concept. To curate an exhibition that reconceptualises decay, it was instrumental to fully reveal the physical qualities of digital technology through which the effects of decay manifest. To describe these and their link to the contemporary, the idea of medianatures – the continuity between media technology and its materiality (Parikka, 2012) – was fundamental to the research, as it ensured that the connections between natural materials, digital devices and cultural effects became visible in the exhibition.

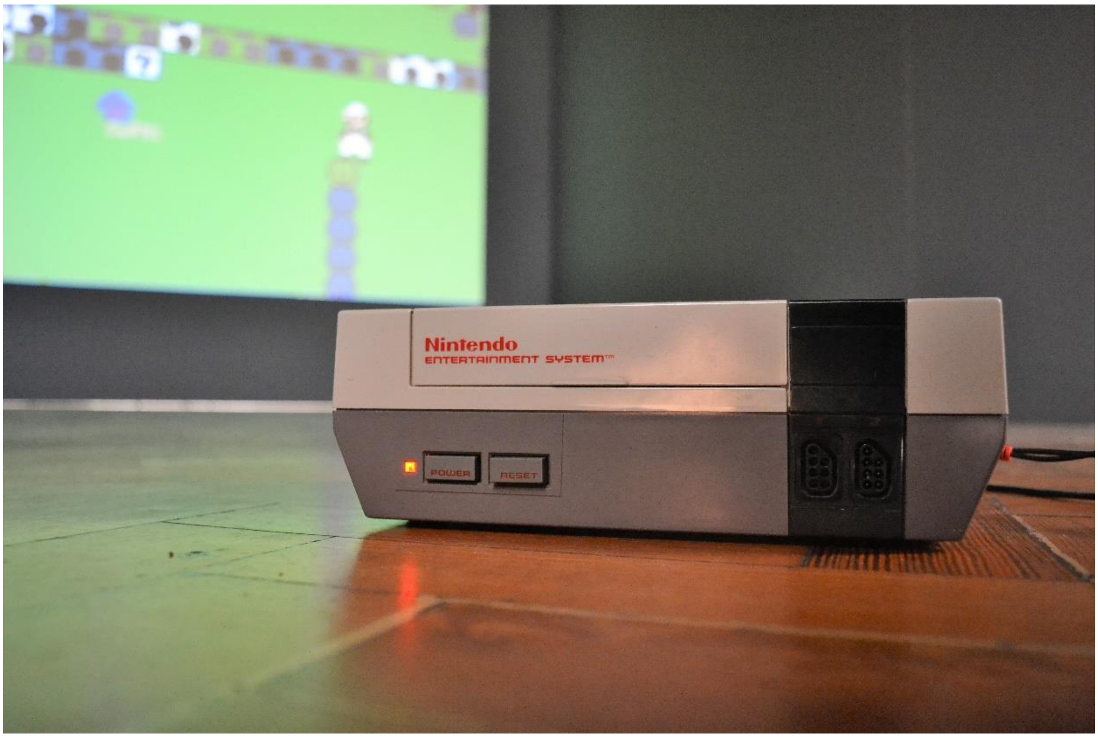

Figure 2. Cory Arcangel and Paper Rad, *Super Mario Movie*, 2005, Installation shot, The Holden Gallery, 2018.

An understanding of digital materiality built on medianatures led to the development of curatorial strategies that informed the problematic relationship between the material and the immaterial in curatorial discourses for digital art, as the methodology explores. For instance, addressing digital decay through obsolescence – of both the hardware and the software while alluding to its consequences on the message – allowed me to formulate a curatorial methodology that considers the multiple facets of digital decay. Through exploring digital decay as a material process of digital culture, the exhibition visualised the failure of imagined technological futures (in terms of capitalist value and functionality of the digital), as the absent presence of interaction strategy strongly determined the exhibition narrative. Arcangel played with a nostalgic reiteration of now obsolete software and hardware, while Menkman's aesthetic shows a looped file that has become an artefact after surrendering to digital decay and the processes of compression. Howse's enclosed installation forms a divide between us (the users) and the creation of data, and Toya's work represents a website which is decaying in front of us that we cannot access. Charles' austere representation of data centres reinforced the idea that we are losing control of these inaccessible places, as Lee removes the idea of accessing digital culture through the technological apparatus altogether, which in her work has lost any interactive functionality, and thus, its meaning. In *machines will watch us die* interaction seemed to have become a folklore tale of past civilizations.

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[43] In 'Realism Materialism Art', Diana Coole defines New Materialism as a 'philosophy of becoming' and describes 'materialization as a dynamic process rather than a state'. (2015:46)

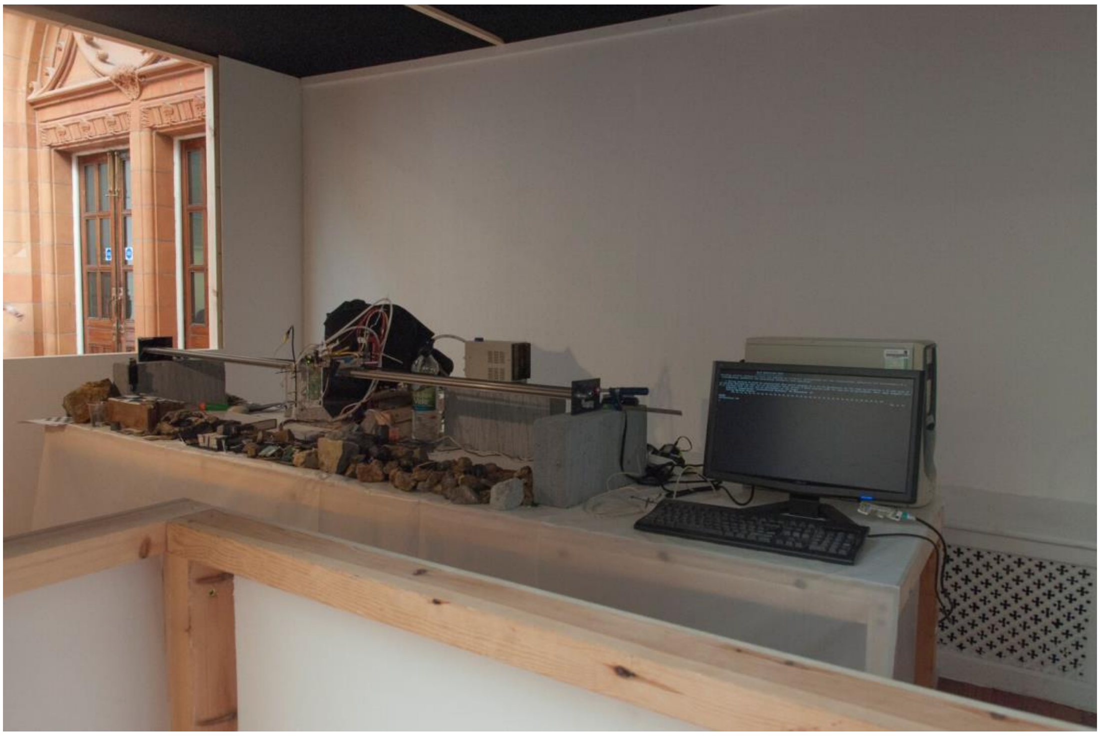

Figure 3. Martin Howse, *Test Execution Host*, 2018. Installation shot, The Holden Gallery, 2018.

Although theoretical notions did not explicitly figure in the writing material accompanying the exhibition, in order to prevent overcomplicating the narrative, Parikka's medianatures (2012) had a fundamental role, as it links digital materiality to geological materials, software, culture and the use we make of technology in the present.

The idea of medianatures visually emerged through the artworks. Martin Howse's work, for instance, embodied the continuum nature-culture, thus creating a link between a materially-oriented notion of digital decay and contemporaneity. By utilising an idea of digital materiality that addresses the digital in both its material and immaterial constructions, the exhibition explored decay in relation to various expressions of digital culture: from the immediacy of data showing present processes of decay (Arcangel, Charles, Toya, Menkman) to dynamics which instead emerged directly from deep time (Charles, Lee, Howse).

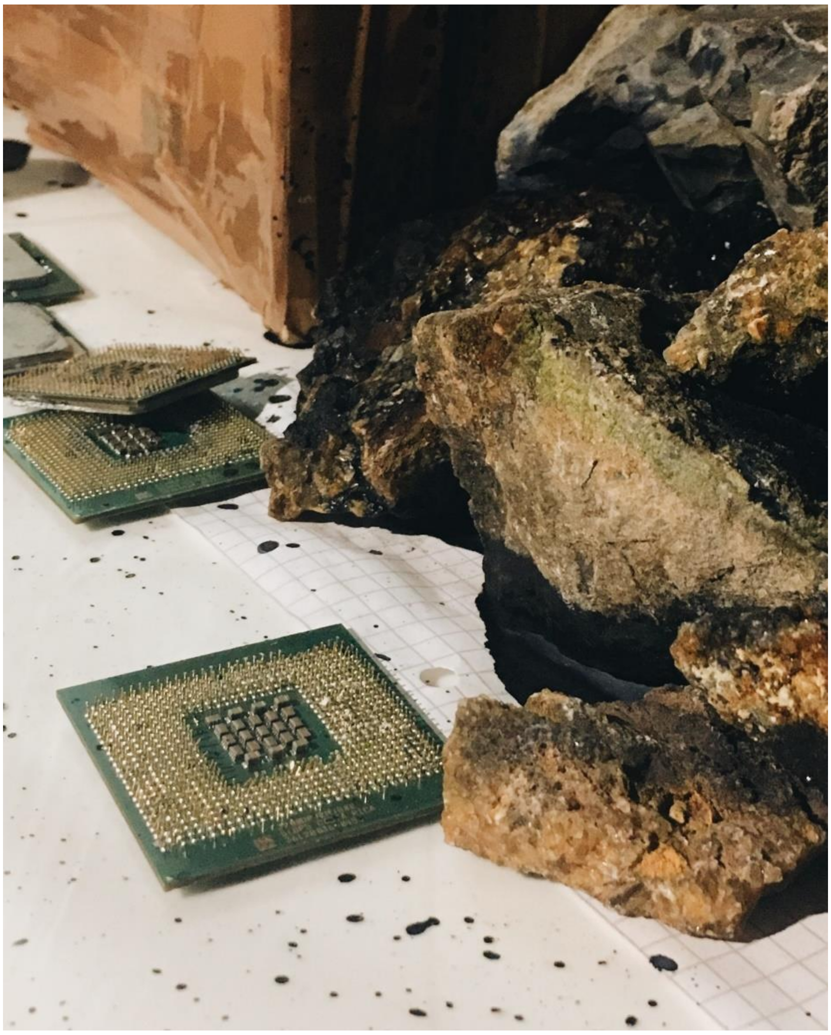

Figure 4. Martin Howse, *Test Execution Host* (detail), 2018.

The conflation of temporalities[44] embedded in the idea of medianatures (Parikka, 2012) was tied to the different materials with which the works were made and responded to the idea of the exhibition as a space to explore contemporaneity, as addressed in the previous chapter. It was also useful in the development of the exhibition narrative as the audience was invited to think about hardware and software obsolescence, consumerism and memory in less anthropocentric terms,[45] in order to contribute to the dialogue instituted between the artworks, materiality, deep time and the immediacy of information. All of the works on show addressed digital decay through various degrees of materiality that connected humans' use of technology to culture and the geological. The geological was also addressed in terms of contemporaneity as a way to understand how digital decay depends on material histories of the past but also reaches a posthuman world.

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[44] This expression was used by Massimiliano Gioni to describe the contemporary in exhibition practice (2008, in Smith, 2012:174)

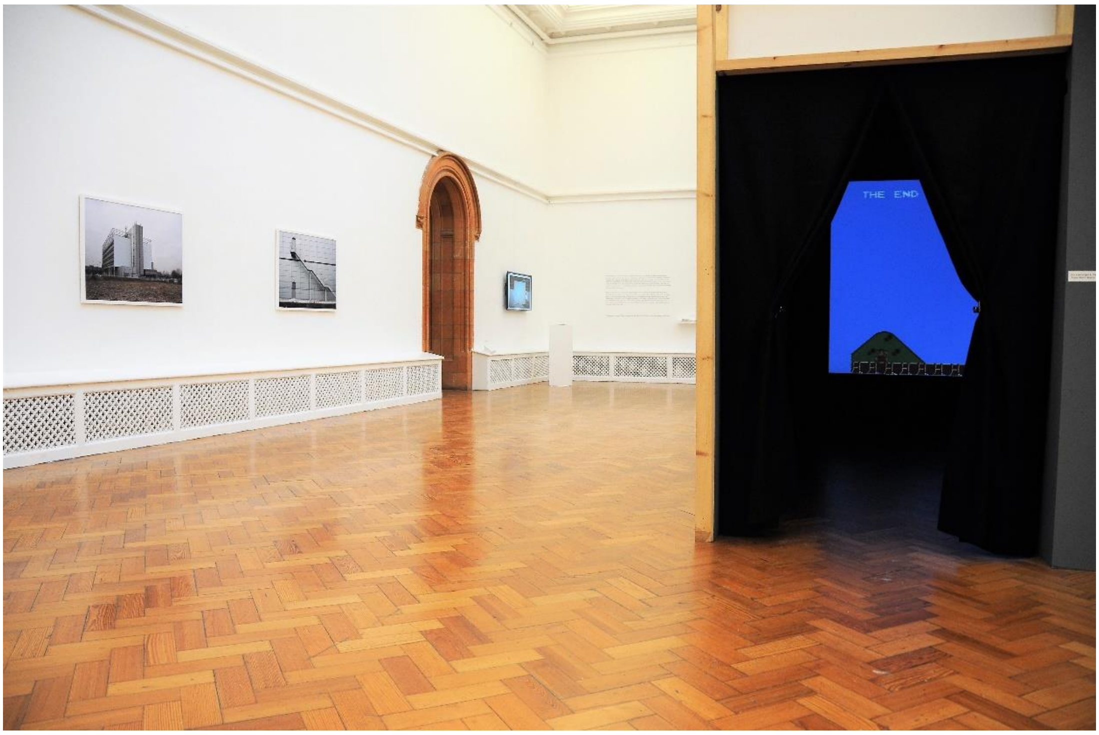

Figure 5. *machines will watch us die,* exhibition shot, The Holden Gallery, 2018.

Digital time and materiality were visualised through the works, which were chosen for their ability to make connections between the materiality of digital culture, its natural deep history and the present and distant futures of digital technology. As outlined in chapter one, curatorial strategies were developed to emphasise these connections and explore digital decay beyond preservation, immateriality and interaction. The decaying of aluminium, copper and germanium, for example – materials that enable information to be stored and distributed (Parikka, 2015) – was addressed through works addressing the technological obsolescence of both hardware and software. The ways in which they explored medianatures determined their presence and position in *machines will watch us die*, which situated the audience within material processes that, although independent from humanity, are perceivable to human beings. As the next chapter explores, this is the rationale behind positioning *Test Execution Host* (2018) by Martin Howse and *3 Years and 6 Months of Digital Decay* (2016-2019) by Shinji Toya near The Holden Gallery entrance.

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[45] This sensibility is also present in *Les Immatériaux* (1985) and *The Inhuman* (1991). Lyotard adopted a non-anthropocentric approach to question the position of the viewer in relation to digital materials which are associated with an inhuman scale of time. This kind of temporality is linked to media archaeological understandings of time as deep time and represents an early example of how these perspectives have been incorporated into a curatorial exploration of digital materiality.

2.1. Curating the *immaterials*

The idea of materiality on which the exhibition narrative was founded was developed against the supposition that describes the materiality of digital technology as purely immaterial. The immateriality of software technology has become the predominant term in discussing the materiality of art, information technology and new media (Lillemose, 2006; Parikka, 2010; Paul, 2016). This tendency has been drawn from the conceptual dematerialization of the art object (Lippard, 1968; 1973) in the 1960s (Lillemose, 2006; Paul, 2007) and translated into an interest in showing and preserving merely the immaterial side of the artwork. However, to comprehensively define digital materiality, the curatorial thinking began with looking at how the idea of immateriality has developed when the effects of digital materials on culture were first explored through exhibition practice in *Les Immateriaux*[46] (1985) – the immaterials. As Nathalie Casemajor (2015) summarises, new theoretical perspectives[47] began to emerge towards the end of the 1980s – *Les Immatériaux* being one of these – criticising what she calls the trope of immateriality (2015).

To offer alternatives to the trope (Casemajor, 2015) or myth (Paul, 2008) of immateriality that has populated the new media debate in curatorial practice, the evolution of the concept of immateriality has here been explored under a post-medium perspective. Since the 1980s – when studies on immateriality began to dismiss the physical elements existing instead in cybernetic theory, such as the exploration of circuit failure and noise (Casemajor, 2015) – two parallel lines of enquiry have dominated the debate surrounding digital materials in art practice (Lillemose, 2006). One began with the dematerialization of the art object (Lippard and Chamberlain, 1968; 1973) and focuses on the immateriality of network and software technologies. The other emerged from new materialist perspectives and focuses on politico-environmental concerns linked to digital technology, such as surveillance, planned obsolescence and related health and environmental issues. Shifting from curatorial concerns about the preservation of the digital medium of the artworks, *machines will watch us die* challenged curatorial approaches to the materiality and temporality of the digital based on medium-specificity,[48] as explored in the previous chapter.

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[46] *Les Immatériaux* (1985), curated by Jean François Lyotard at the Centre Pompidou in Paris.
[47] Casemajor (2015) identifies five different trends: The Berlin School of Media Studies and Friedrich Kittler's media Materialism; Lev Manovich's Digital Materialism; studies on electronic textuality (N. Katrine Hayles); New Materialism; Neo Marxism and the materiality of digital labour. She also mentions Donna Haraway and her Cyber Manifesto (1991) as part of the new materialistic perspective embodied in the Material Turn.

Jussi Parikka (2010) argues that the debate on the materiality of digital media in the 1980s and 1990s was driven by the focus on the non-object-based nature of information networks, which is the reason why the debate concerning the digital has been fuelled by rethinking materiality under the labels 'immaterial' and 'dematerialization' (Parikka, 2010). At this time, the confusion surrounding concepts of materiality, immateriality, medium and new media emerged, and the notion of immateriality went on to monopolize the curatorial debate in terms of preservation (Paul, 2008). Lillemose (2006) also sees a parallel between the dematerialization of conceptual art objects in the 1960s and the immateriality of networks in the 1980s. He argues (2006) that the term dematerialization is not always accurate in describing conceptual art[49] because the emphasis on the concept makes the object obsolete but not dematerialized (Lillemose, 2006). In the exhibition, a now obsolete notion of the technological object based on immateriality was rethought in order to reveal digital decay. Also, any reference to dematerialization was avoided with the aim of presenting the material and the immaterial as co-dependent features of the exhibition experience.

In exhibition history, the tension between the material and immaterial was first explored by *Les Immatériaux* (1985). Lyotard's understanding of digital materiality – materials that are endowed with a certain vitality[50] (Lillemose, 2006) – is strictly material, and the parallel lines of enquiry into materiality outlined above are both conceptually included in the exhibition. In the title, *Les Immatériaux*, the focus on immateriality that derived from conceptual art, Fluxus and network theories of the previous decades merges with a strong critical awareness towards how digital materials are shaping society and culture. The analysis of the theory[51] behind *Les Immatériaux* contributed to developing the idea of materiality, which was inspired by Lyotard's understanding of digital materiality.

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[48] Anna Munster (2012) notes that defining digital aesthetics is challenging because of digital media's mutability. Due to the obsolescence that forces both digital hardware and software to be constantly updated, determining curatorial strategies up to date with the specificity of the medium would be problematic.

[49] Atkinson (1968) already pointed this out in his 'Letter to Lucy Lippard and John Chamberlain concerning their essay 'The Dematerialization of Art 1968'.

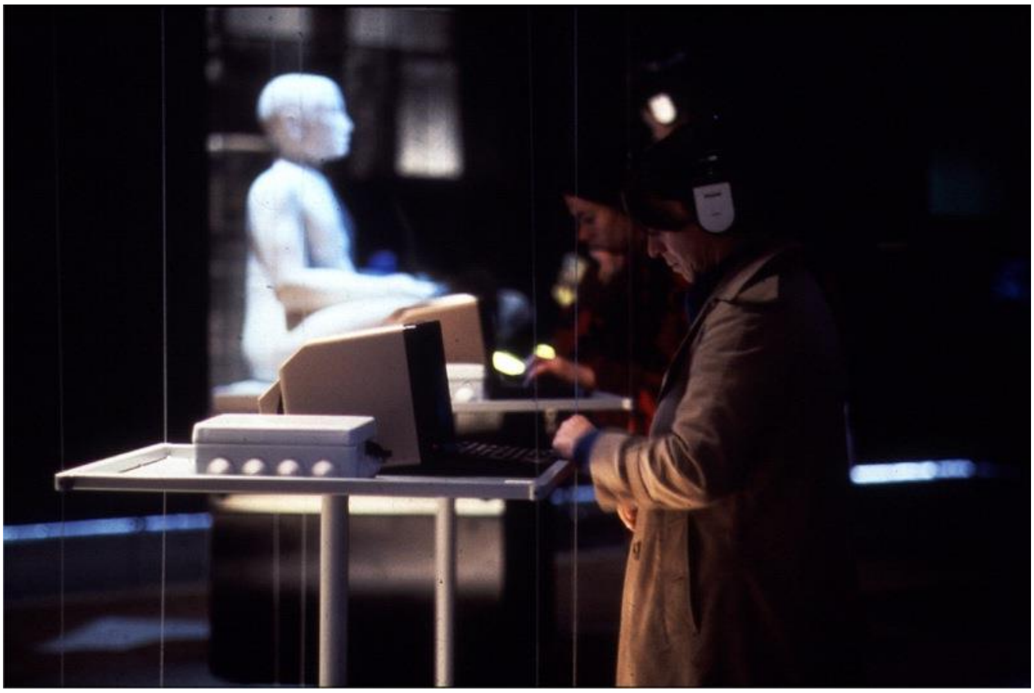

Figure 6. *Les Immatériaux*, exhibition shot, 1985 © CCI/J.-C. Plancher.[52]

Discussing Monica Wagner's distinction between matter, material and materiality (Wagner, 2001 in Petra Lange-Berndt, 2015), Petra Lange-Berndt (2015) explains *Les Immatériaux* in terms of the shift from material, intended as the support that artists use, to materiality, which is a term that belongs to the digital age[53] and assigns physical qualities to immaterial technology such as code (Wagner, 2001 in Petra Lange-Berndt,

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[50] It is the same vitalism that Gilles Deleuze assigned to material assemblages. It represents a response to the Cartesian notion of inert matter available to human beings who wanted to fulfil their desire for power over nature (Coole and Frost, 2010).

[51] The artworks featured in *Les Immatériaux* are rarely mentioned in the literature, whereas the exhibition's philosophical content has gained an almost mythical status.

[52] Image taken from Nathalie Heinich, 'Les Immatériaux Revisited: Innovation in Innovations: Landmark Exhibitions Issue' (2009).

[53] Like Lyotard, Parikka (2010) identifies materiality as a concept that has been brought into discussion by the pervasive nature of digital technology.

2015). The correspondence between this notion and Lyotard's immateriality must be found in the philosopher's understanding of materials and marks the beginning of a curatorial reconsideration of the concept of decay through the diverse range of materialities introduced to art practices with the advent of digital technology.

Based on the analysis of the root 'mât', Lyotard explains immateriality through the concepts of material, materiel, maternity, matter and matrix. Respectively:

> 'the material is the support of the message; the materiel or hardware is what handles the acquisition, transfer and collection of the message; maternity designates the function of the sender of the message; the matter of the message is its referent (what it is about, as in the French for 'table of contents'); the matrix is the code of the message.' (Lyotard, 1985 in Greenberg et al., 1996:118)

Including 'mât' in the title, Lyotard automatically incorporated into the project a reconsideration of the notion of maternity, which in art stands for authorship, thus reflecting on the consequences on humans caused by the advent of new technology. The prefix 'Im' symbolises a moment of self-reflection on the 'decline of humanism' (Lyotard, 1984; in 2015:36), which contributed to developing a non-anthropocentric approach to materiality. In questioning the relationship between humans and materials – a relationship once attached to René Descartes's conception of using human power in order to possess nature – Lyotard challenged the boundaries between human, non-human materialities and nature.

2.2. A reflective unease

machines will watch us die's exploration of digital decay through the temporal materialities of digital culture and immateriality's participation to medianatures (Parikka, 2012) filled the gallery space with a sentiment of unease analogue to Lyotard's inquietude, as the methodology introduced. The Artforum essay, 'The Sublime and the Avant-garde' (1984) is useful in illustrating what Lyotard meant with 'unease' in relation to the curatorial choices behind the curation of the Pompidou exhibition. Relevant here is the exploration of the idea of the sublime in relation to capitalism. Lyotard was most concerned with the 'loss of the temporal continuum' (1984:online) in terms of the transmission of memories. *Les Immatériaux* visualised the shift from modernism to postmodernism, which advances in digital communication technologies made possible. He argues: 'The distribution of information is becoming the only criterion of social importance, yet information is by definition a short-lived element' (1984:online). His emphasis on duration is relevant to unlocking *machines will watch us die*'s understanding of unease. The duration associated with real-time (and immateriality) is one of immediacy, but information technology also responds to the duration of the system on which it is run. Data mutation and transferal to newer devices has become a widely used practice. However, *machines will watch us die* did not focus on preservation strategies for immateriality, as stated in the Introduction. This sensibility emerges from Lyotard's analysis of the sublime and is used to critique the use of real-time operations in capitalist sociality as a strategy to maximise profit. If the postmodern era was characterised by the conquest of time (Lyotard, 1984), the advent of digital culture played a fundamental role in its definition.

Building on Edmund Burke (1757), Lyotard proposed an informed idea of unease building on the contemporary sublime as ecstasy of temporalities (Lyotard, 1984). In *machines will watch us die*, the sense of unease was created through the selection of artworks, sounds and a title that was designed to grab the audience's attention, while also making them feel uncomfortable during the exhibition experience. The element of terror that Burke identified as a constitutive element of the sublime (1757) was conveyed to the exhibition through the title, the fear of losing our digital memories – personal as well as historical when related to human civilizations – and that of running out of the natural resources that allow information to exist. The exhibition also speculated on a dystopian future populated with images of the by-products of present digital culture turned into fossils of a forgotten world.

Also, there is a correspondence between the suspension of terror – a condition of Burke's sublime – and the exhibition, in which the unease was also created, as previously mentioned, by the apparent suspended state of decay emerging through the artworks. The short-circuit between the various durations and temporal dimensions of digital decay revealed the unity of digital materiality's expressions, as the geological process of materials emerged as the underpinning which enables the existence of digital culture. Such a convergence of durations contributed to create a feeling of suspension. The witnessing of what in terms of human time can be perceived as an eternal moment was thus juxtaposed with the experience of the loss of interactivity – a more immediate by-product of digital decay – present in the exhibition.

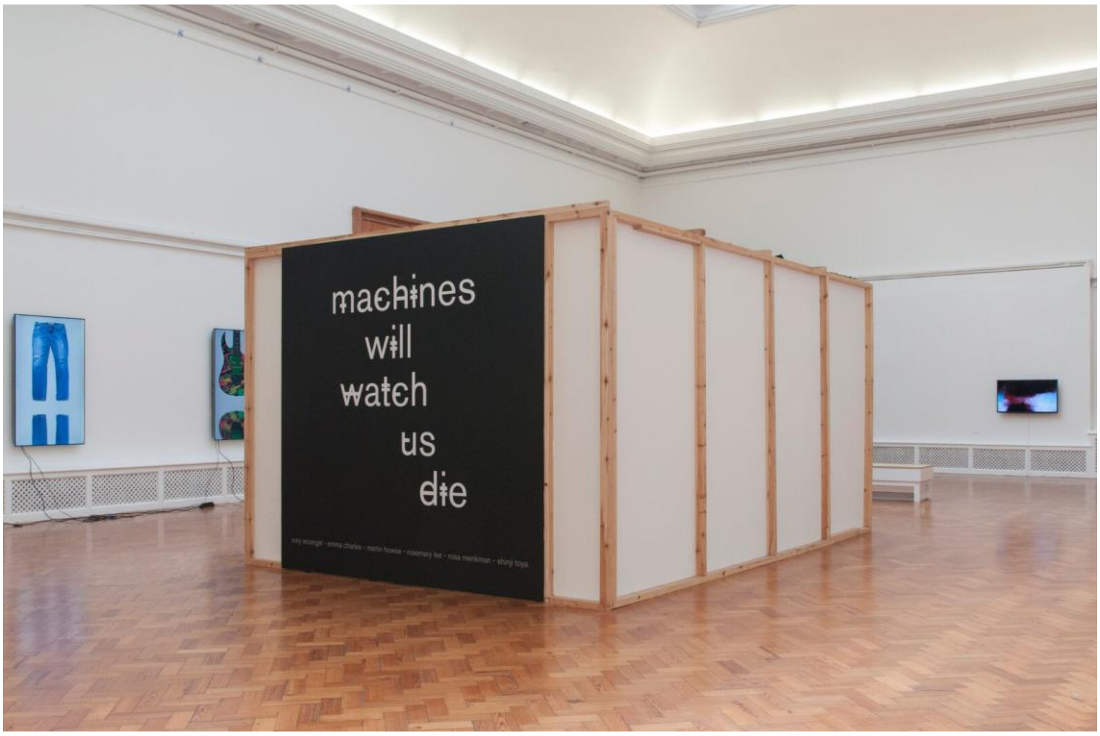

Figure 7. *machines will watch us die,* exhibition shot, The Holden Gallery, 2018.

Interesting is the parallel between *Les Immatériaux*'s aims and those of *machines will watch us die*. The two shows were very different in terms of scope and size, but a critique of the myopia embedded in technological progress is found in both. Lyotard warned us about the changes that digital technology would bring to the way in which human beings interact between themselves and how they relate to the world. *machines will watch us die* aimed at making the viewer think about how, due to the quantity of all forms of digital materiality produced on a daily basis, technological devices will outlast our civilisation due to the durations of digital decay. The aim of the exhibition was not to be a survey on how art practice addresses the effects of the digital on culture. Instead, it explored digital decay as a concept – as a digital phenomenon – to show, among other things, that the changes feared by Lyotard in 1985 have now taken or begun to take place. As the majority of our memories are produced digitally and are stored in devices that are built to break, what will happen when the Internet becomes obsolete? These were questions raised in the show from a variety of different angles. The exhibition explored digital decay through themes of failure, memory, nostalgia for past digital culture and its utopias,[54] consumerism, ethics of production and a sense of unease deriving from an understanding of digital materiality as an active agent – vibrant matter – that is shaping our future.

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[54] For Fredric Jameson, the present of postmodernist culture was characterised by a 'nostalgia mode' (1991).

2.3. The vibrant materialities of digital decay

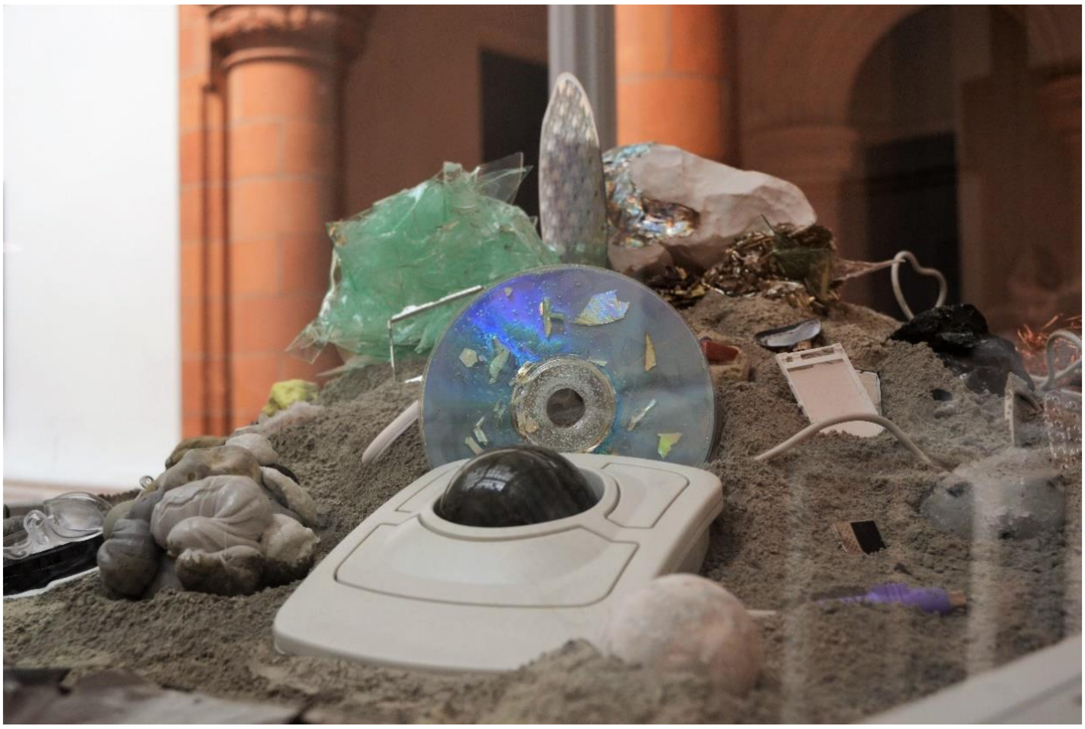

Figure 8. Rosemary Lee, *Molten Media*, 2013-2018. Installation shot, The Holden Gallery, 2018.

machines will watch us die emphasised the various digital materialities that may go unnoticed:[55] the infrastructure of the Internet with all the servers, cables and cooling machines and data centres; the rocks, rare earth minerals and ores that make up the structure of microchips; the virtual image; the innerworkings of a video game cartridge, data and software. The idea was that of bringing to the viewer's attention the fact that, behind the interface of digital devices, digital culture is enabled by the existence of physical materials. Although hidden behind the interface or within the device, these materialities do exist and, as Jane Bennett (2010) has identified in terms of forgotten and disused matter, they possess agency. The artworks were also selected for their ability to create new and informed relationships between the artworks' materiality and digital decay. These could be contextualised through the connections that Bennet identifies between agency, decay, material assemblages and garbage (2010).

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[55] The physicality of digital materiality is overlooked at the consumerist stage of its ecology when all that matters is that we are able to be connected, exchange information and capital. The manufacturing and disposal stages are instead defined by it, as the immaterial comes into the debate when the device has been switched on by the user.

By acknowledging garbage as one of the actors at play within the current environmental, socio-economic and political debates, Bennet's take on agency allowed the exhibition to rethink digital decay in relation to the disused,[56] forgotten,[57] obsolete (or in the process of becoming such[58]) digital materialities. Her notion of agency also links ideas of digital materiality and temporality, which emerged from media archaeology and media geology, to consumerism and production ethics. Bennett's vital materialism is based on the principle that garbage and inanimate matter are strongly linked with modes of production and consumption. Her notion of agency as thing-power was built on the image of materiality as flow (Deleuze, 1987 in Bennett, 2004) and on Bruno Latour's agency as continuum: a power of all material bodies, which every actant, human and non-human expresses in its own way (Latour in Bennett, 2004). In her view, all materials play an active role in all aspects of existence, and by assigning thing-power to both organic and inorganic matter, Bennett gives particular importance to the study of overlooked materialities such as food, electricity and trash.

Adding Bennett's notion of agency to the exhibition's understanding of materiality provides a further link to medianatures, as the artworks become instances of material processes which, like digital decay, unfold over entangled temporalities. The natural resources – the metals, rare earth minerals and ores that come together in the form of assemblages – constitute the geological substrate (Parikka, 2015) of digital culture. Assigning thing-power to the geological substrate, the exhibition argued that these digital assemblages represent the lieu in which decay begins to unravel, its effects becoming visible in the interconnections represented by the idea of medianatures.

For Bennett, an assemblage[59] – a group of different entities without a hierarchical structure – possesses agency, as do its members. Both Bennett and Parikka reassign agency to apparently inert materials, such as minerals and e-waste, and refer to them as 'dead matter' (Bennett, 2010) and 'the living dead of media history' (Hertz and Parikka,

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[56] The future fossils in Lee's *Molten Media* (2018).

[57] The Java Applet Lake in Arcangel's *Lakes/Vai* (2013) and *Lakes/Jeans* (2016), and the rock tape in Howse's *Test Execution Host* (2018).

[58] The Internet infrastructure in Charles' *Fragments on Machines* (2013).

[59] Bennett uses Deleuze and Guattari's idea of the assemblage (1980) to explain how agency is distributed across various materialities, once again overcoming the human-nonhuman antithesis.

2012). As explored in the Introduction, embedding Garnet Hertz and Parikka's idea of 'zombie media' (2012) in the curatorial provided an understanding of certain works as obsolete but active agents – the zombie media of planned technological obsolescence (Hertz and Parikka, 2012). The artworks thus had the potential to reconnect the manmade ideological construction of planned obsolescence to the earth, once again overcoming the nature-culture opposition that Latour (1991), Haraway (2003) and Parikka (2012) already addressed.

The exhibition conveyed the idea of a zombified digital, which has lost its potential functionality, but still intra-acts and shapes contemporaneity. For instance, this emerged through the disruption of linear progress represented in Rosemary Lee's *Molten Media* (2013-2018). In the work, devices that were produced only a decade earlier played the role of fossils belonging to a distant future. These artefacts, which belong to an unspecified yet impending time, acted as a warning – an 'attractor, an anticipation shaping current behaviours' (Fisher, 2012:online) for the viewer. Even if the difficulties of seeing the physicality of digital decay in real-time were present, the artworks' materialities worked together to reveal how the idea of digital decay embodies the failure of digital utopias. The reference to the idea of zombie media (Hertz and Parikka, 2012) as technology that is haunting the contemporary present became relevant to curatorially exploring technological change and relative social shifts.

The failure of futurity, which is also embedded in the title, links with Mark Fisher's analysis of the concept of hauntology (2012). Fisher's investigation focuses on electronic music as a genre which was able to convey imagined futures. In the exhibition, this could be translated to the loss of immaterial-based utopias as well as, in his words, the 'disappearance of the future [and] the deterioration of a whole mode of social imagination…' (2012:online). An exploration of digital decay brings with it a reflection on how the social potential of the Internet has collapsed. An enquiry into the role of digital decay within this context is put forward by Charles' contribution to the exhibition, *Surfaces of Exchange* (2012) and *Fragments on Machines* (2013), as well as Toya's *3 Years and 6 Months of Digital Decay* (2016-2019) and Lee's *Molten Media* (2013-2018). The narrative thus looks at a future that haunts the present, as addressed in the Introduction in relation to the title, as every layer of the research exhibition conspired to make an experience of the contemporaneity of digital decaying material accessible to the audience, as the gallery becomes the space where different temporalities coexist.

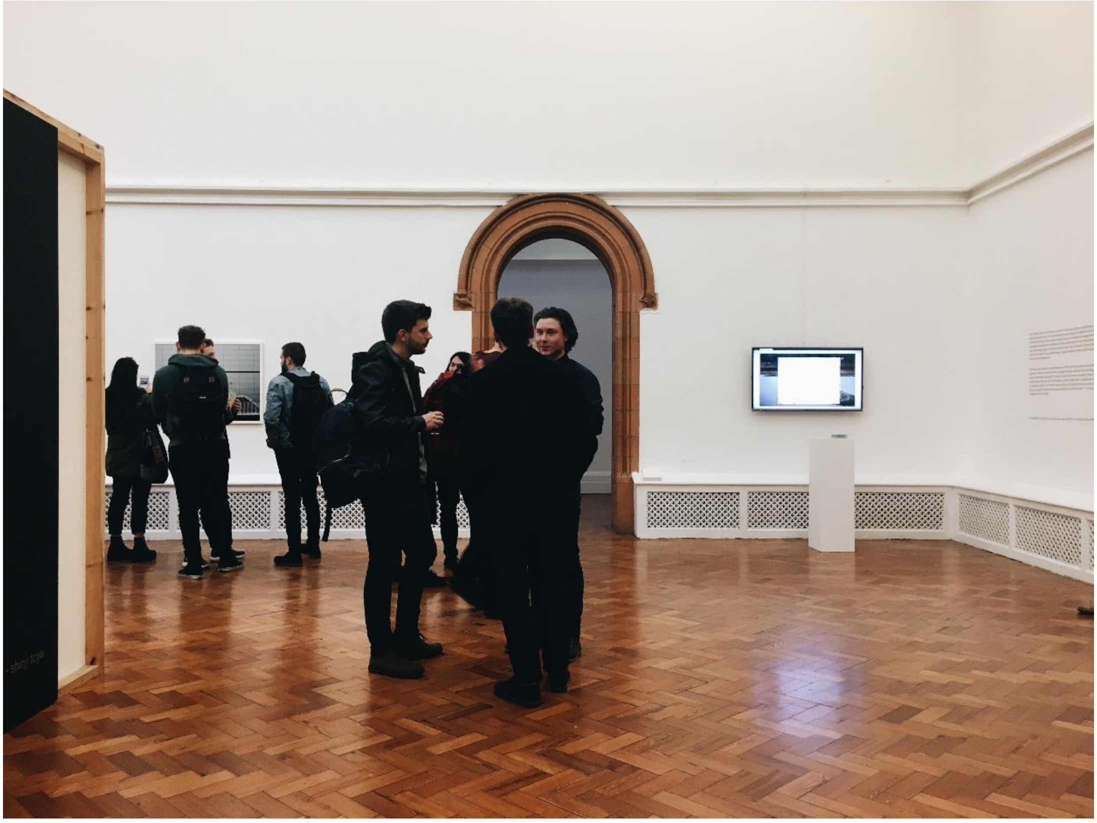

Figure 9. *machines will watch us die,* exhibition shot, The Holden Gallery, 2018.

Considering the artworks as zombie media is integral to those works which embed digital materials that ceased performing due to obsolescence (Arcangel's 1985 Super Nintendo's Mario), system failures (Toya, Menkman, Lee and Charles' loss of data) or that are deconstructed to its core parts (Howse's primitive Turing machine). Zombie media is anachronistic technology that still plays an active role in the present. Being out of its proper time and designated temporality, the concept of zombie media crosses the layers of temporalities of contemporaneity. Haunting here becomes a means to '[resist] to the contraction and homogenization of time and space' (Fisher, 2012:online) which was created by the advent of the digital.[60] Obsolete technology and its temporal materialities, coming from the past and now made redundant in capitalist terms, possess the ability to haunt both the present and the future.

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[60] As Fisher (2012) points out, this was explored by Paul Virilio, Jean Baudrillard and Jacques Derrida as the collapse of space and time.

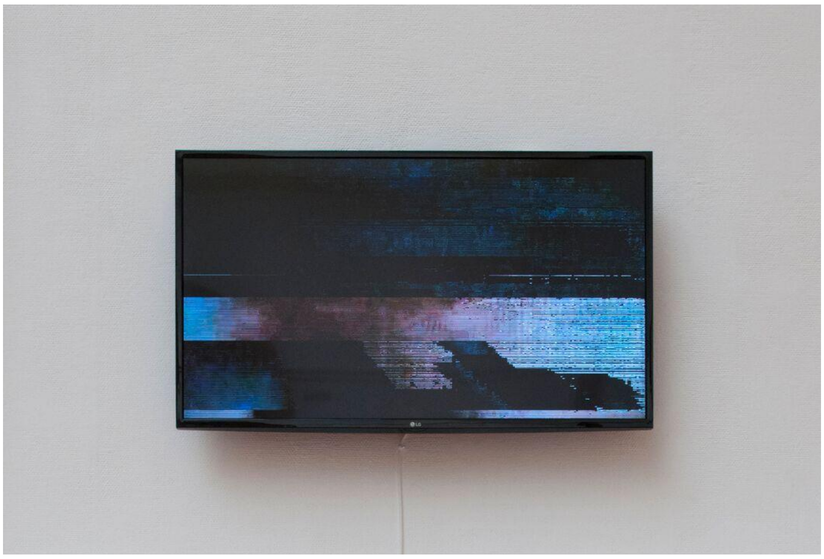

Figure 10. Rosa Menkman, *To Smell and Taste Black Matter* (detail), 2009.

The work of Cory Arcangel is emblematic of this instance. His use of a 1985 Nintendo console and cartridge and the java lake effect are reiterated and follow that 'compulsion to repeat' what is 'no longer, but which is still effective' in the present, which Fisher defines as one of the two possible 'directions of hauntology' (Fisher; 2012:online). The other direction refers instead to what is yet to happen and what 'is already effective in the virtual' (Fisher; 2012:online). This could be linked to Lee, Menkman and Toya's works, as well as the title of the exhibition, all of which making an enquiry into a future that is yet to happen: the decline of humanity, the collapse of digital culture as we know it – an element which also emerges in Charles's work –, loss of data, as well as the loss of control on which data is stored, maintained and preserved, as the walkthrough in the next chapter details.

Understanding the materials of digital technology as 'assemblages' and 'vibrant matter' (Bennett, 2010) – both ideas involving processes – added an ulterior temporal dimension to the definition of materiality and contributed to shaping the idea of decay as a process entangled with time. As mentioned in the methodology, it was useful to consider digital temporalities in terms of contemporaneity, as 'technics and technical objects determine our experience of time as they facilitate access to the past and anticipation of the future' (Cox and Lund, 2016:27). Understanding digital materiality as geological and obsolete, yet present and entangled with the functioning of both the geological and culture, allowed the exhibition to conceptually introduce an idea of digital decay as a process that reaches different temporalities: human and non-human.

The audience's experience of time in the exhibition was defined by their own use of digital devices in the everyday, an assumption which represented another layer of contemporaneity.

As the methodology argues, it is an issue to convey the temporal scale of the digital (Parikka, 2016) within the limited frame of an exhibition, and the notion of contemporaneity was applied to the temporal understanding of materiality on which the exhibition was based. Jussi Parikka illustrates contemporaneity as an idea that is strictly material:

> 'infused with an odd sense of synchronized materiality that arranges the multiple temporalities as part of its circuit. It manifests itself differently depending on which angle you take: from the raw materialities of the earth inside computational devices to the computationally managed abstract epistemologies that action the movement of such matter.' (Parikka, 2016: 27-28).

A temporal notion of materiality is based on the conviction that media technologies are 'environments [through which] different times and different experiences of time come together in a shared present' (Cox and Lund, 2016:29). The idea of media as environments links with Bennett's (2009) and Parikka's (2015) media assemblage. The latter, however, focused more on deep temporalities of digital culture. Common to both definitions is the idea that digital materiality possesses agency and concurs in shaping a contemporary that is no longer tied to anthropocentric perceptions of reality.

2.4. Deep time

Common to both the conceptual frame of media archaeology and the narrative of the exhibition is a methodological approach to investigating materiality that goes beyond a linear conception of history and progress to challenge the supposed newness (and presentness) of digital culture (Huhtamo, 1995). This is an approach that looks at the works as a representative instance of materials that belongs to nonhuman histories, and that reveals a decaying process that goes beyond human temporality, as we will see in chapter three. The emphasis on the geological nature of the digital, for instance, was supported by an understanding of deep time – a geological time[61] (Parikka, 2015) – as one of the temporal layers of contemporaneity. As Parikka (2015) and Zielinski (2006) argue, there is the need to explore deep time in order to comprehend materiality and challenge the conception of progress as linear that does not allow for a comprehensive analysis of technological media.[62] Parikka (2015), however, calls for a notion of deep time that is able to address the materiality of technology by way of investigating the geophysical qualities of its materials.

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[61] This was also included in the rationale.

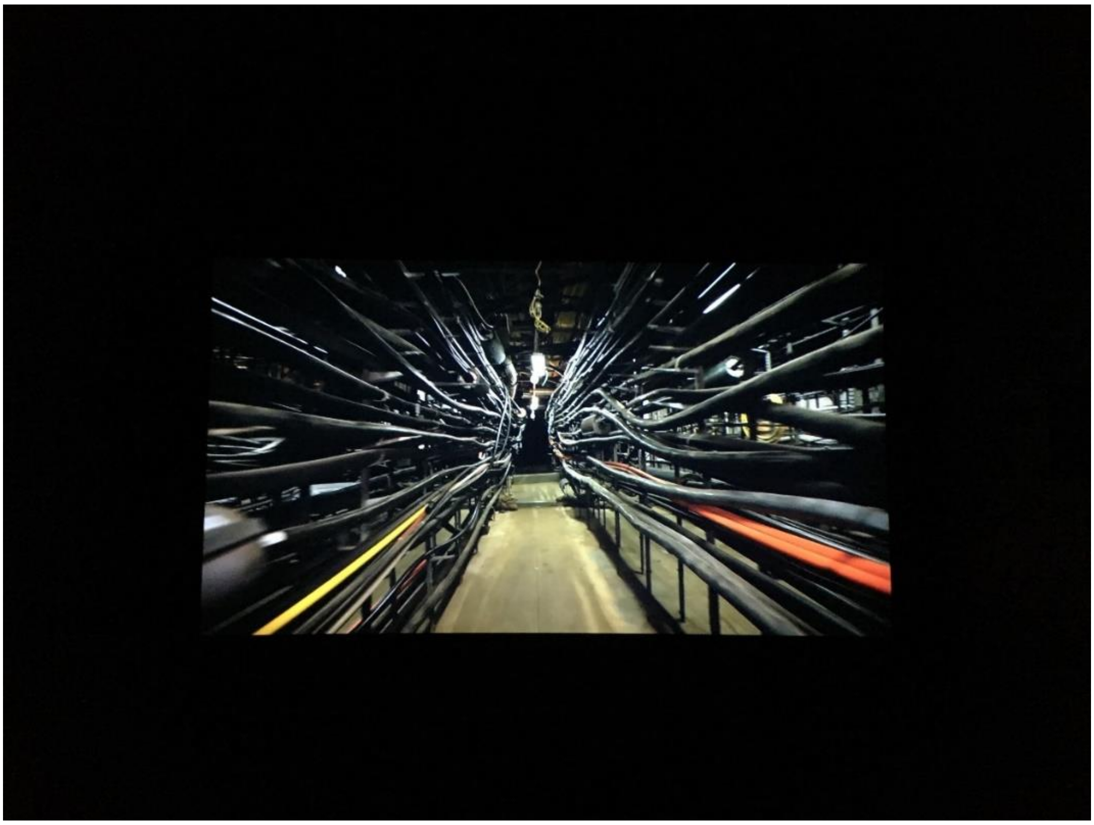

Figure 11. Emma Charles, *Fragments on Machines*, 2013. Exhibition shot, The Holden Gallery, 2018.

Duration, in relation to deep time, is defined as 'a slow chemical sedimentation of time' (Parikka, 2016:12-13). It is problematic to translate the durational experience of deep time into an exhibition as, by comparison, a human being's life is shorter than an instant. Moreover, the geological components which enable the existence of the immaterial are hidden behind the device's interface and inside data centres (buildings which are usually difficult to access), as the exhibition revealed. To counteract this practice and bring out the deep durational nature of digital decay, Howse's *Test Execution Host* and Charles' *Fragments on Machines* were included in the show. These artworks made the notion of deep time more accessible as they represented it as a temporal dimension strictly embedded with the now. If Howse addresses the planetary duration of digital decay through the geological underpinnings involved in the present circulation of information, Charles juxtaposes images of heavy infrastructure, such as tons of copper wire, to the fluidity of the voiceover representing real-time data. The viewer was trusted with having the ability to discern such a variety of timescales and the ways in which they entangle.

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[62] Parikka's reformulation of deep time was developed from Siegfried Zielinski's *Tiefenzeit* (2006) and James Hutton's 'Theory of the Earth' (1788 in Parikka, 2015). However, Parikka (2015) goes beyond Zielinski's use of deep time to analyse the interconnections between art and science and explore 'variations of media history' (Parikka, 2015:8).

2.5. Immaterial temporalities

However, deep time is not the only temporality in *machines will watch us die*. As machines are able to epistemologically contribute to the contemporary (Cox and Lund, 2016; Ernst, 2013), the operational time of the immaterial, which stems from deep time materialities and allows digital culture to function in the 'quasi real-time' present,[63] contributes to the narrative in terms of 'micro-temporality' (Ernst: 2013:57). These are also interpreted as layers of contemporaneity as a way to maintain the connection between the various temporalities included in the exhibition. The idea of micro-temporality is applied to investigate processes of decay that respond to computational operations: 'Execution involves micro-instructions, micro-operations and a micro-temporality of things where codes, materials and actions are composed in a dynamic environment' (Braidotti, 2018:43).

However, the layers that come closer to the concept of real time facilitated the human experience of the process of digital decay. Due to the kinds of interaction experienced daily with digital culture, there is a correspondence between temporalities that are closer to humans and the rate of visibility of digital decay. Email exchanges, online shopping, social media and stock transaction and gaming are all examples of activities that appear to mostly involve data rather than the digital infrastructure. The device is considered as merely the portal to connectivity and interaction, and the physicality of the Internet is rarely contemplated. The exhibition thus invited the audience to reconsider interaction and connectivity through the deep time lens of digital decay.

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[63] The closest that we can get to experience micro-temporality is through the idea of real time (Cox and Lund, 2016).

All the micro-temporalities and the macro-timescales of digital culture are read in terms of contemporaneity, as they have influenced the way in which the audience experience time and space in the digital era. Benjamin Bratton refers to these as 'the stack' (2014):

> 'Planetary scale computation takes different forms at different scales: energy grids and mineral sourcing; chthonic cloud infrastructure; urban software and public service privatization; massive universal addressing system; interfaces drawn by the augmentation of the hand, of the eye, or dissolved into objects; users both overdetermined by self-quantification and exploded by the arrival of legions of nonhuman users (sensors, cars, robots). Instead of seeing the various species of contemporary computational technologies as so many different genres of machines, spinning out on their own, we should instead see them as forming the body of an accidental megastructure.' (Bratton, 2014 in Cox and Lund, 2016:17)

The curatorial strategies developed to curate the exhibition and reconceptualise digital decay were designed as instruments to emphasize the materiality of digital technology. Together with this dramatization of materiality (Brown, 2010) goes one of temporality that invites the viewer to think in less anthropocentric terms in order to consider that the digital is not just about newness, but also embodies processes of geological scales. Instead of favouring the presumption that associates technology with immateriality, *machines will watch us die* was built on a more comprehensive notion of materiality which looks at how processes of digital decay are able to shape ideas of obsolescence and interaction, human memories, future histories of Internet infrastructure and future fossils.

2.6. The pre-interactive condition of digital materiality: obsolescence and the material/immaterial dichotomy

machines will watch us die critically analysed immateriality and interactivity as these are concepts whose constant publicity and promotion have led to the false need of possessing the faster, better designed model (Huhtamo, 1995; Gansing, 2003). They are thus linked to the profit-orientated concept of planned obsolescence, for which a device is designed with an inbuilt process of becoming dated, unfashionable and inoperative:

obsolete.[64] The myths of immateriality and interactivity have led us to believe that we always need the newest technology. As a consequence, devices such as smartphones are discarded yearly due to companies pushing for upgrades to the next model. In terms of timescales, however, this tendency is inversely proportioned to the lengths of digital decay. Planned obsolescence operates in the present whereas digital materiality stretches from its geological past, is active in the human present and stretches to the post-human future. Through an exploration of digital decay, the exhibition invited the viewers to reconsider the short-term perspective of a capitalist system that focuses only on the presentist present, without taking into consideration how the past and future are defining moments of contemporaneity.

> "Presentism' should not be confused with 'the present'. It describes a time-relation that has no temporal horizon other than itself. Presentism is a crisis of time, the sense that only the present exists, a present defined at once by what historian François Hartog calls 'the tyranny of the instant and the treadmill of an unending now', a capacity only for a short-term perspective. As Boris Groys remarks: 'Today, we are stuck in the present as it reproduces itself without leading to any future." (Lund, 2016:online)[65]

In an archaeological fashion, the exhibition and events invited us to rethink the past of digital materiality as a temporal frame that overlaps with humanity's timescale.

The inclusion of the manmade construction of planned obsolescence added another layer of contemporaneity to the exploration as the exhibition offered alternative histories of digital materials. Its narrative contextualised itself within the 'anachronism of the authentic' (Balsom, 2014) as addressed in the methodology. This approach was built on *dOCUMENTA (13)*[66] and *Ghosts in the Machine*[67], and was inspired by the ways in which these exhibitions explored how digital technologies have influenced the notion of objects and materiality, with an apparent return to the pre-digital era. Lacking an anthropocentric point of view and exploring how agency – traditionally a human concept – has now become associated with matter and materials, these exhibitions put forward innovative approaches to analyse the effects of the digital on culture by going back to archaic and analogue technology.

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[64] The definition of planned obsolescence was taken from The Economist. https://www.economist.com/news/2009/03/23/planned-obsolescence

[65] For context, it is interesting to see how Lund (2016) refers to François Hartog's regimes of historicity: 'Historicity means the way in which individuals or groups 'situate themselves and develop in time' and it is therefore closely related to the concept of Eigenzeit. The notion of 'regimes of historicity' refers to the way in which the relationship between past, present and future is articulated, and the order of time that can be derived from it thus differs depending on whether the category of the past, the future or the present is dominant. The notion of regimes of historicity, understood as the articulation of the relationship between past, present and future, whether in a macro- or micro-historical sense, is therefore a useful tool to elucidate different experiences and ways of being in time – asking which present is operative in different places and at different times, and to which past and future it is connected. Hartog sees a contemporary regime of historicity, where the past and the future are regenerated only to valorise the immediate, as replacing the modern one, where the present and the past were conceived in terms of the future.' (Lund, 2016:online)

In *machines will watch us die*, digital decay was addressed through what is defined as the pre-interactive condition of the digital. The exhibition made visible that the functionality of digital culture is enabled by natural materials and, by bringing to the audience's attention the non-digital matter which unexpectedly allows the existence of digital culture, it did not merely engage within discourses concerning the digital divide. Instead, it experimented with an approach based on the absent presence of interaction to counteract the immaterial-based tendencies that emerged in exhibitions on digital art, such as the acclaimed *Electronic superhighway: from experiments in art and technology to art after the Internet (2016-1966)*[68] at Whitechapel Gallery, London (2016).

Electronic Superhighway investigated the relationship between art and new media from 2016 to 1966. Curator Omar Kholeif defined both the exhibition and the publication as 'time machines' (Kholeif, 2016:28), a concept that is also present in *machines will watch us die*. However, in *Electronic Superhighway* the idea of the time machine involves travelling backwards on a linear timescale. In contrast, Huhtamo's time machine (1995) and the ways in which *machines will watch us die* linked it to contemporaneity opened up new ways of revealing the different timescales of digital decay, which are understood as nonlinear due to the nature of the materials involved.

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[66] Carolyn Christov-Bakargiev, *Documenta 13*, 9th of June – 16th of September 2012, various locations, Kassel.
https://www.documenta.de/en/retrospective/documenta_13

[67] Massimiliano Gioni, *Ghosts in the Machine*, 18th of July – 30th of September 2012, New Museum, New York City.
https://www.newmuseum.org/exhibitions/view/ghosts-in-the-machine

[68] Omar Kholeif, *Electronic superhighway: from experiments in art and technology to art after the Internet (2016-1966)*, 29th of January – 15th of May 2016Whitechpel Gallery, London.
https://www.whitechapelgallery.org/exhibitions/electronicsuperhighway/

Kholeif (2016) claims that *Electronic Superhighway* possessed an archaeological look. He also states that this emerges right from the beginning of the exhibition experience where Harun Farochi's work examines augmented reality's pictorial language in comparison with images from antiquity. Being archaeological, however, entails a focus on the materiality of things (Roelstraete, 2009), which is here mostly limited – with a few exemptions: Trevor Paglen and Cory Archangel's works, for instance – to explore how artists have responded to networked environments in a reverse linear chronology. Similar to the Barbican's *Digital Revolution* (2014),[69] *Electronic Superhighway* turned out to be survey that aimed at deconstructing the history of digital art in relation to the oppositions between new and old media, between the virtual and the physical.

When visiting the exhibition, the feeling of being overwhelmed by digital culture was present. However, the inverse and linear chronological approach that took us from the newest to the oldest experiments in arts and technology failed to acknowledge that diverse timescales emerged in relation to different understandings of digital materiality. In both the exhibition and the accompanying catalogue,[70] the dichotomy between old and new[71] is parallel to a definition of materiality that was built on the opposition between analogue and digital, as the exhibition related 'analogue material forms to processes that have been enabled by the computer and our networked condition' (Kholeif, 2016:30). The will of experimenting beyond the limitation of digital technology mainly translated in going beyond the limitations of its physical infrastructure – a tendency that describes many early digital works. This emphasised the immaterial over the material and fuelled the excitement surrounding terms such as 'network', 'cyber' and 'virtuality', to which artists began to respond.

What follows, contextualises *machines will watch us die* from a different angle, linking it to mainstream preservation initiatives from which the exhibition distances itself. The Variable Media Initiative[72] which began in 1999 is a preservation initiative based on the performative materiality of the digital artwork, which now comprises a variety of institutions and archives, such as Rhizome.[73] Based on strategies that aim at translating the work once its medium becomes obsolete, the Variable Media Questionnaire was developed to guarantee that all the vital information about a work, including its physical components, was recorded. In this context, it is believed that what needs to be preserved are the ways in which the work behaves – which is what gives it its meaning – rather than its medium. Emulation of behaviours is one of the strategies employed. The exhibition *Seeing Double: Emulation in Theory and Practice*[74] at the Guggenheim Museum in New York City (2004), another example of a mainstream exhibition that is based on the immaterial/material dichotomy, exemplifies this approach. From the rationale:

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[69] Conrad Bodman, *Digital Revolution*, 3rd of July – 14th of September 2014, Barbican, London. https://www.barbican.org.uk/hire/exhibition-hire-bie/digital-revolution

[70] Kholeif's essay begins with a quote from 'Halt and Catch Fire' by Joe MacMillan (Episode 1, 2013-ongoing): 'Computers are not the thing. They are the thing that gets you to the thing' – Joe MacMillan.

[71] This opposition was defined as the 'digital divide' and was mapped out by Clare Bishop in her article, 'Digital Divide', which was published in *Artforum* in September 2012.

[72] http://www.variablemedia.net/

> 'The exhibition tests the promise of an experimental treatment – emulation – for rescuing new media art from the ravages of time. *Seeing Double* featured a series of original art installations paired with their emulated versions. The exhibition offers a unique opportunity for both art experts and the public to compare both versions directly and decide for themselves whether the re-creations capture the spirit of the originals' (2004). [75]

The Variable Media Initiative, Rhizome and *Seeing Double* focus on the work's behaviours – interactive, encoded, networked – thus prioritizing the preservation of immaterial behaviours and their medium over materiality. However different in scope, *Electronic Superhighway* also did not fully explore the multiple expressions of digital materiality. It gave an overview of art practices that have emerged consequently to the development of digital technologies. Materiality was thus analysed as a reaction to immaterial utopias, rather than being understood as a temporal concept. As the exhibition told a history rather than testing out new understandings of digital materiality, it failed to address the material processes and shifts that are determining contemporary digital culture.

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[73] One of Rhizome's preservation initiatives is the Net Art Anthology, an online exhibition which aims at preserving and presenting Net artworks (a new work is uploaded weekly, and every entry is followed by an email notification to subscribers as to recall popular mailing lists of the late 1990s) that have become inaccessible due to obsolescence. The project addresses the lack of historical discourses around Net Art and the challenges that lie beyond preserving the performative materiality of the Internet and digital technologies. Assigning performativity to materiality follows new materialistic modes of thinking, but at Rhizome there is still the tendency to dismiss the idea that Net artworks rely on a physical infrastructure. The way in which digital artwork labels described the work's materiality at the turn of the Millennium is no coincidence: Java, Software, Browsers, for example. Most often there was no mention of the physical infrastructure beyond Net Art.
https://anthology.rhizome.org/

[74] *Seeing Double: Emulation in Theory and Practice*, 18th of March – 16th of May 2004, Solomon R. Guggenheim Museum, New York City.
http://www.variablemedia.net/e/seeingdouble/

[75] Extract from the exhibition rationale.
http://variablemedia.net/e/seeingdouble/

machines will watch us die instead exposed the connections between the material, the immaterial and their temporalities to create correspondences between the works, explore materiality rather than the medium and to reconceptualise digital decay. As a metaphor for visualising the latter, the emphasis on materiality was used to give shape to digital data and rethink immateriality in relation to the environment where these materials are sourced. This meta-critical attitude towards immateriality was embedded in the exhibition to explore an idea of digital decay that is far from the curatorial preoccupations on the preservation of the medium.

The aim of the exhibition was that of testing something out rather than merely presenting or demonstrating a certain theme to the public. It thus fits with the tendency of experimenting with digital materiality with the aim of highlighting aspects of contemporaneity that Transmediale *afterglow* (2014), Abandon Normal Devices (2017) and *Digital Matter: The earth behind the screen* (2017) also responded to. However, as explored in the Introduction, these approached digital by-products in terms of effects rather than using the research exhibition as a platform to experiment with ideas and methods. As bigger institutions deal with a huge number of audiences, institutional curating is rarely allowed the same degree of freedom as the research exhibition.

The exhibition thus proposed something different, as it departed from both the material/immaterial dichotomy that still defines curating and preservation approaches and the tendency to explore digital materiality through a geo-political and social lens, which has recently emerged with smaller scale organisations. The next chapter will identify the ways in which the exhibition differentiated itself from the various approaches proposed, as it looks at how theory and practice came together to research and disseminate the various stages of the exploration of digital decay.

Chapter 3

A reflection on *machines will watch us die*

This chapter looks at the set of ideas and methods that contributed to *machines will watch us die,* including the gap which emerged between the research aspirations and their layers of actualization in the exhibition; between curating and the curatorial. These are here discussed to provide a reflection on the ways in which the curatorial study on digital decay was undertaken and received. An evaluation of the conceptual framework and methods that emerged throughout and defined the research is here proposed. Through the chapter, a better understanding of how the research exhibition acted as a platform to create new meaning and test out new ideas, and how the events and the catalogue supported and/or problematised it in a variety of ways, emerges. If the previous two chapters were dedicated to methods and ideas through which *machines will watch us die*'s contribution to knowledge was produced, this last part of the thesis presents a considerate evaluation of how practice and theory came together to answer the research question.

3.1. The research exhibition

The exhibition was charged with the ability to carry out 'unexpected work' (Rogoff, 2012:24), as the relationship between its ambitions 'and the ability of any ambition to actually manifest itself in an illustrative form' (Rogoff, 2012:24) is here explored, particularly in terms of the research exhibition's ability to visualise its conceptual framework. However, this potential inability does not have a negative connotation, as it is able to contextualise the research exhibition within the multiple layers of the curatorial. Curating an exhibition entails a variety of restrictions in terms of budget, space and institutional regulations. However, as outlined in the methodology chapter, the differences between curating and the curatorial, described by Rogoff as the curatorial gap (2012), were creatively addressed to preserve the epistemological nature of the research exhibition. In this study, this gap contributed to the post-exhibition reflection, as it opened up spaces to test out the curatorial strategies and ideas that were adopted, as well as the relationships generated among all participants: the exhibition, the works, the writing material, the events, the audience, the gallery as space and as an institution, key themes and ideas and myself, the curator.

As the exhibition was part of the research process and not the end product, the ways in which the artworks responded to the theme contributed to determining its role within the curatorial. Since thematic exhibitions can place too much emphasis on the theme rather than the works themselves (Rugoff, 2003), the selection and positioning of the works was carefully considered to avoid such an occurrence. The title was chosen as it creatively avoided any direct references to decay. It was not conclusive, and rather than offering a precise idea of what the exhibition addressed, it was left more to interpretation, generating questions rather than answers.

3.1.1. The rationale

Since I wanted it to be clear, concise and not overcomplicated, the process of arriving at the final version of the rationale was one of editing out unnecessary elements and finding a way to embed theoretical ideas of contemporaneity, vibrant matter, medianatures and a temporal notion of materiality, without actually mentioning any of those notions directly. As the exhibition is a research exhibition part of a PhD, the risk of being too academic and alienating members of the audience had to be avoided without compromising the rationale. The theoretical ideas on which the exploration of digital decay was based were thus translated in terms of content. For instance, the dichotomy between the material and the immaterial was presented in terms of concrete examples, while also introducing a variety of temporal frames in the first paragraph:

> In the Nineties, the rise of the Internet as a mythical site for the collective imaginary was accompanied by a pervasive excitement. Since then, the immaterial has been defining our existence. Almost everything has become mediated. From living life through social-media to turning our smartphones into augmented reality headsets, it seems that our attachment to the natural world is becoming more and more compromised. If on the surface it is all about the immaterial utopias of the digital revolution, then what lies beneath its glossy interface? *machines will watch us die* breaks down our understanding of digital

> materiality to explore digital decay as a process of different forms and temporal dimensions.

Following examples of how immateriality is causing a detachment from 'the natural world', the rationale introduced the idea that something is happening behind the action of interacting with the device's interface, which enables us to be constantly connected. The last sentence reveals how new understandings of digital materiality play a key role in the exploration of digital decay. This last line should have brought clarity to the viewer, who had presumably already encountered Howse's and Toya's works.

The second paragraph digs deeper into the theoretical context and themes. It introduced the idea of deep time as another temporal dimension present in the exhibition (the 1990s and the immediacy of the immaterials were presented in the first paragraph). The link between the material and the immaterial as interlinked materialities is also mentioned here to put forward the idea that all the materials of digital culture are impermanent.

> Paradoxically, technological innovations depend on million-year long processes which belong to deep-time, as information travels on components made of rare earth minerals, metals and ores. By linking materials of geological scale to the immediacy perceptible to humans, the artworks visualise processes of digital decay to reveal the impermanence of all things digital.

The last section of the rationale introduced the themes through which the artworks address digital decay, as well as giving a sense that the past, present and future of digital materiality all play a role within processes of digital decay. The idea of contemporaneity was thus introduced in very simple terms.

> The exhibition presents a radical idea of digital decay which reflects on themes of consumerism, ethics of production, memory and failure. Throughout the show, a sense of nostalgia for the technological past is combined with a sense of anxiety for an unknown future – a looming archaeological site for the digital culture of our times.

The senses of nostalgia and anxiety that played a major role within the development of the exhibition narrative, as we will see in the walkthrough that follows, are here mentioned to give the viewer a hint for a possible reaction to the title.

The first draft included references to preservation strategies in relation to digital decay and the artwork as time machine, for instance. The latter was edited out as it could have limited potential for the viewer's intuitive experience of the convergence of temporalities. The reference to preservation strategies was deleted as it did not facilitate a creative understanding of the exhibition. A direct mention of the ideas of medianatures and contemporaneity was also avoided with the aim of encouraging different layers of audiences to engage with a complex subject. The final version of the rationale was based on balancing a variety of elements: revealing enough information without being too explicative and limiting possibilities in terms of viewing experience; providing a context for the viewer to understand and reflect on the themes; avoiding the feeling of the exhibition being too academic and offering context to the title. As it emerges from the walkthrough which follows, perhaps a more direct reference to the absent presence of interaction could have been included as it was an important element of the research exhibition.

3.1.2. The walkthrough

In terms of what follows, the walkthrough provides my own curatorial position informed by conversations with members of the audience and my presence in the space.[76] These, as we shall see, allowed me to evaluate the outcome of my curatorial decisions, such as the positioning of *Test Execution Host* (2018) and *3 Years and 6 Months of Digital Decay* (2016-2019) at the entrance of the space. To provide the audience with context, a comprehensive idea of digital materiality was introduced through the works' manifestations of the digital from the very beginning of the exhibition narrative. Most viewers spent some time at the entrance, moving between the two works and looking at the catalogue and rationale. It was important that the works that were positioned here (Howse's and Toya's), adjacent to the title and rationale, revealed the materiality of digital culture in its various material, immaterial and temporal formations.

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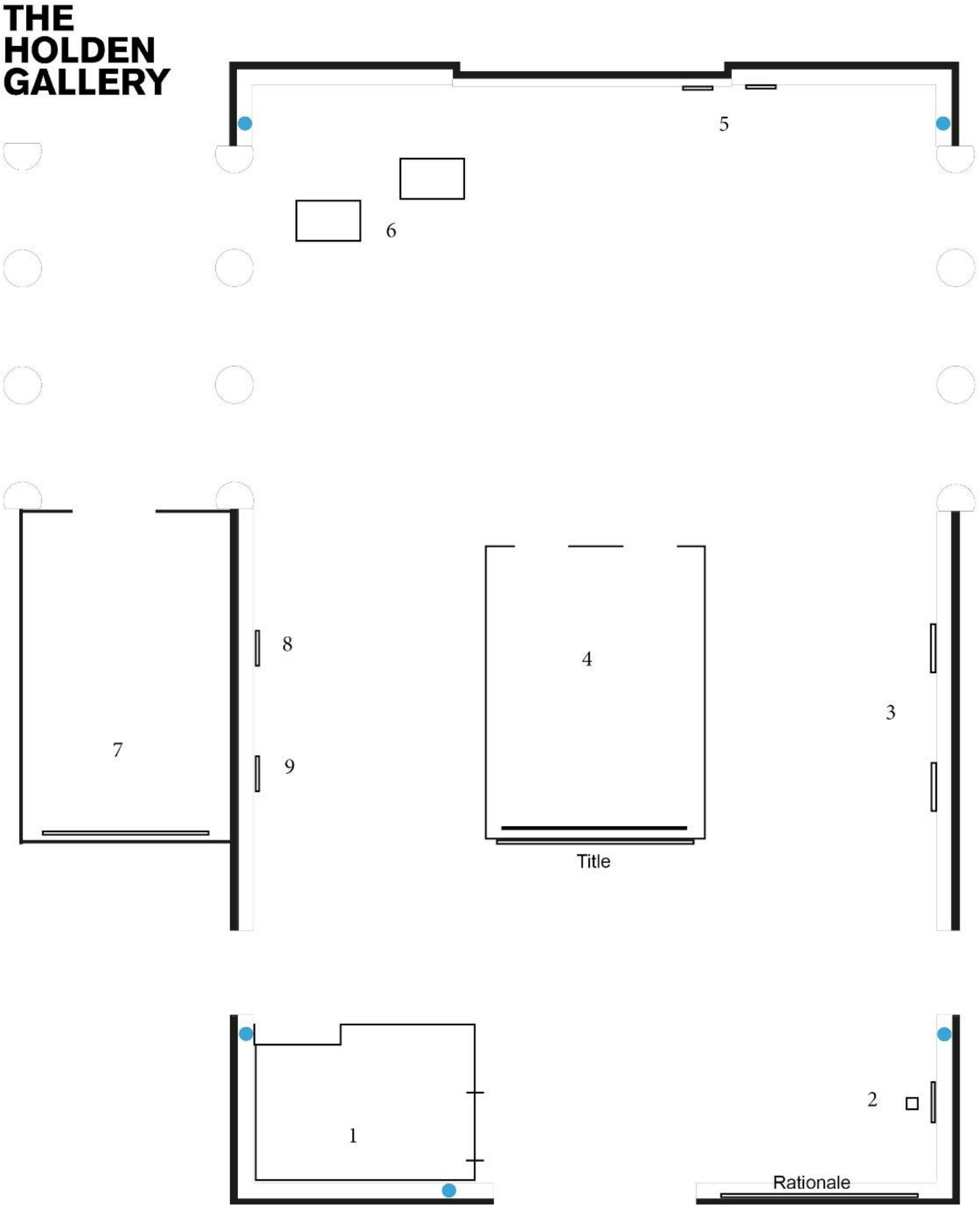
[76] My curatorial vision includes an interpretation of the works which was developed in relation to *machines will watch us die*'s themes. When relevant, however, other people's writings on the works –or on the artists' practice – are referenced in the form of contextual support.


THE HOLDEN GALLERY
5
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Title
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Rationale

Figure 12. Floor plan of the exhibition *machines will watch us die*.

1. Martin Howse, *Test Execution Host*, 2018.
2. Shinji Toya, *3 Years and 6 Months of Digital Decay*, 2016-2018.
3. Emma Charles, *Surfaces of Exchange*, 2012.
4. Cory Arcangel and Paper Rad, *Super Mario Movie*, 2005.
5. Rosa Menkman, *To Smell and Taste Black Matter*, 2009.
6. Rosemary Lee, *Molten Media*, 2013-2018.
7. Cory Arcangel, *Vai/Lakes*, 2014.
8. Cory Arcangel, *Jeans/Lakes*, 2016.

The way in which they related to the title and rationale also opened up numerous enquiries on the exhibition narrative as a whole. Reading the rationale, and perhaps looking at the catalogue, also contributed to creating new ways for the audience to respond to the exhibition. Since the beginning of the exhibition experience, the title questioned futurity in relation to technological advances. Referring to an undetermined future, it suggested that a reflection on the past and present of digital materiality – which were referenced throughout the exhibition narrative – could expand our understanding of digital decay. A criticism of anthropocentrism was also embedded in *machines will watch us die* as human beings were also rarely featured and, when present, were not the main subject of the work. Through the title and the connections it formed with *Test Execution Host* and *3 Years and 6 Months of Digital Decay*, the notion of contemporaneity as an entanglement of past, present and future histories of the digital was also introduced in the first section of the exhibition, as the viewer was not expected to realise or know about contemporaneity. However, I worked towards conveying the co-dependency between nature and culture in the exhibition for the viewers to experience through the works, which thus became representative of medianatures in the contemporary condition.

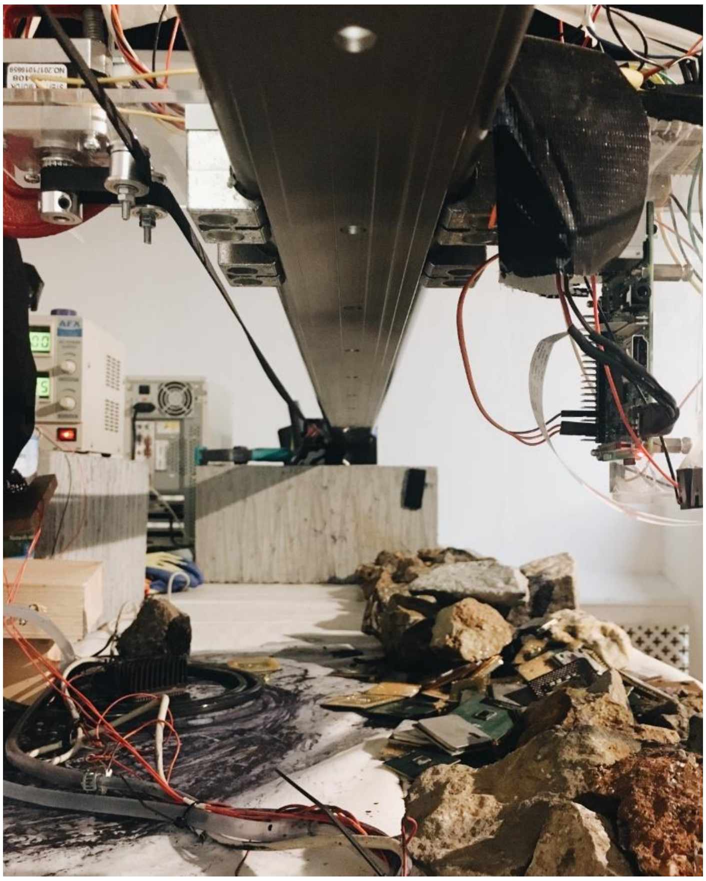

Figure 13. Martin Howse, *Test Execution Host* (detail), 2018.

Martin Howse's *Test Execution Host* was installed here as a way to immediately introduce the audience to the idea that digital culture is not estranged from geological materials. The interpretation of the work reflects its connections with the themes of *machines will watch us die*. It was based on the artist's writings[77] and on the *Dissolutions* (2016) rationale,[78] an exhibition that featured a prototype of the work. The work, which represents a primitive and deconstructed Turing machine, brings out the geological nature of digital materiality, which would otherwise remain hidden within the device. Through Howse's work, rare earth minerals, ores and metals are visualised as examples of the physical materiality that allows information to exist. As it was placed by the entrance, the audience was expected to approach it with curiosity as it was encountered after seeing the title but before reading the rationale. This was a curatorial decision that was meant to open up questions regarding the relationship between the title and the work. Also, the lab-style installation in a contained space kept the audience at a distance.[79] Two windows, one on each side of the installation, allowed the audience to look at the work while restricting their access to it. The workshop element of *Test Execution Host* also contributed to generating curiosity regarding the work and its relationship with the title. As it is an ongoing and processual work, the machine moved and responded to software operations, creating a bridge between deep time and the immediacy of data exchange. Its constant movement and dripping of cyanotype liquid, symbolising information, made the audience return to it throughout their visit.

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[77] *Test Execution Host* book (2016).

[78] 'Dissolutions examines the connection between Earth and computation. This artistic research residency and experimental exhibition project intervenes within cycles of earth-extraction-earth-return in which the minerals which form the material basis of digital technology are pulled from the ground using large-scale industrial processes, eventually to be re-absorbed in the form of e-waste and pollution. Dissolutions aims to construct a series of playfully experimental situations (open labs, workshops, talks, collective field trips) exploring the material-basis of contemporary and future cultures, focusing on the transition from large-scale industrial technologies, particularly those of extraction and mining, to the seemingly invisible realm of the digital.' (Flemming, 2016:online)

[79] The installation of *Test Execution Host* inside a box was also determined by health and safety regulations and insurance purposes.

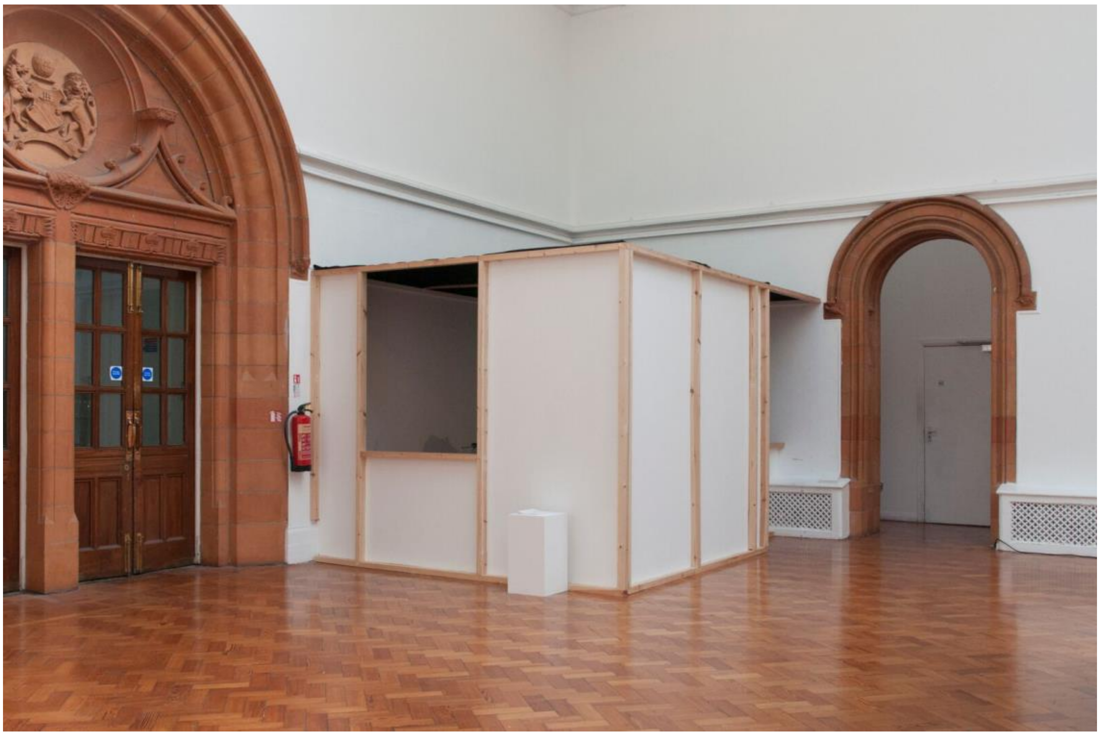

Figure 14. Martin Howse, *Test Execution Host* (installation view), 2018.

Test Execution Host functions without human interaction. The audience was able to witness the machine writing and reading information on a tape constituted by rocks from the restricted access and points of view granted by the windows. Data – a material which we are more acquainted with – is poorly writing on the monitor due to the raw qualities of the tape. This act of writing and reading information links the machine to real-time operations. It was not a coincidence that *Test Execution Host* was installed close to where the title was positioned, which also associates the notion of agency to technology, thus posing questions such as, if machines function without us, will they really watch us die?[80]

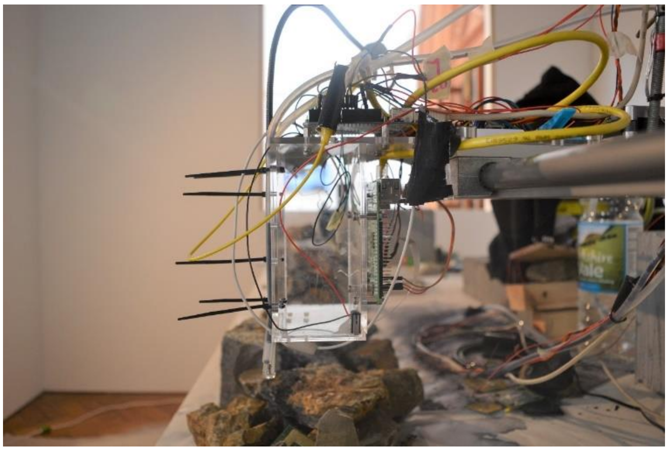

Figure 15. Martin Howse, *Test Execution Host* (detail showing the work and window from inside the install box). The Holden Gallery, 2018.

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[80] The artist's response to this question is included in the interview in the catalogue.

However, even if *Test Execution Host* introduced the viewer to different understandings of the digital, the work had to be accompanied by a description to be fully comprehensible, which is why the exhibition guide was placed outside the installation box. Without the aid of writing material, it may have been difficult for the viewer to know that the work was a deconstructed Turing machine even if a book – the title of which references Alan Turing – was part of the installation. Its description and the rationale clarified how Howse's work visualised deep time and the raw materiality of digital culture, showing how processes of malfunction could depend on the decay of earth materials. In the description, the reference to the Turing machine links the work to the first advances in computer technology that took place in Manchester, where Alan Turing used to work. It also revealed that the rocks and minerals were collected from a local quarry, further linking the past of Turing in Manchester to local geological formations of digital materiality. *Test Execution Host* visualises obsolescence of the object, but also of the message, which has been distorted by the deep time properties of the rocks on which code was written. Toya's work instead juxtaposes the lifespan of digital memories that we have created with the lifespan of the Internet that is still unknown to us.

The voice emerging from *3 Years and 6 Months of Digital Decay* – a work installed with no headphones – drove the audience towards the rationale. The catalogue, which was available for free upon request, was also placed here. Toya's work was the only piece which featured a title that referenced decay directly, facilitating potential experiences of the exhibition narrative in relation to decay. The work opposes the claim that the digital does not forget and could potentially last forever. The voice-over compared the decaying processes of analogue media, artworks and architecture, while also stating that where materiality is a prominent attribute, preservation approaches are encouraged. Processes of compression and data loss visualise the almost imperceptible slow decay of the image. On the screen, the third image, which appears between the original and the copy, shows the materiality that was lost in the process of copying. The difference between the two images is barely visible, though the third image shows that it exists.

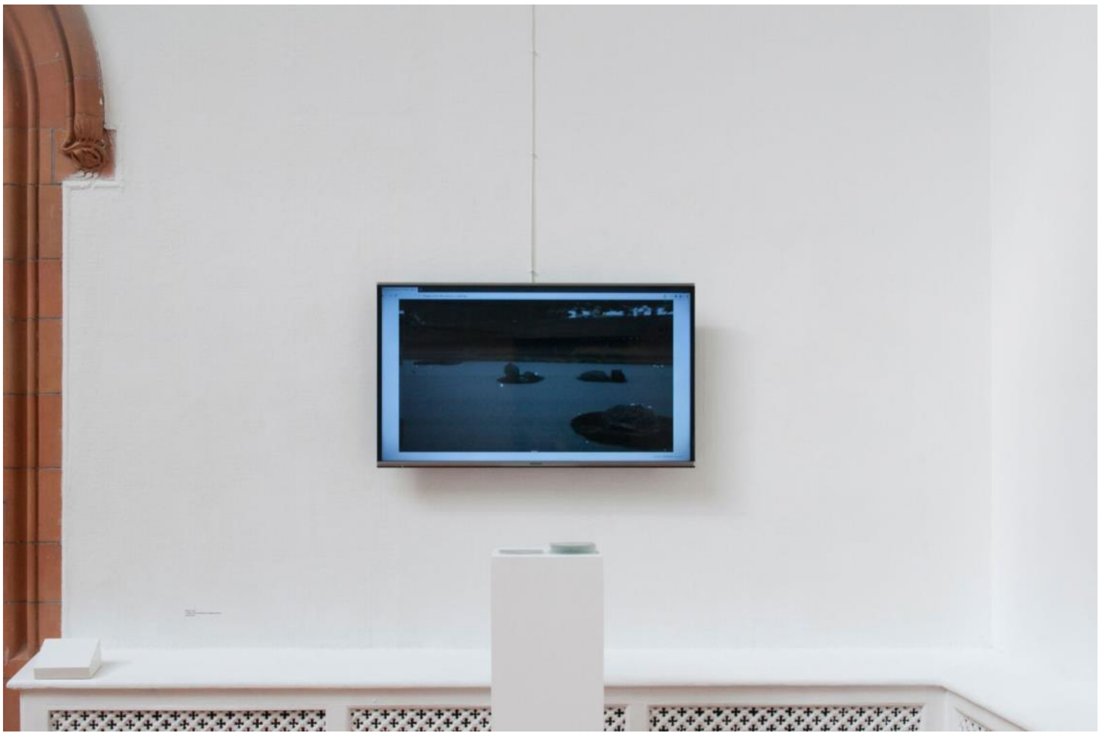

Figure 16. Shinji Toya, *3 Years and 6 Months of Digital Decay*, 2016-2018. Installation shot, The Holden Gallery, 2018.

The voice-over addresses the ways in which data is stored and decays online, as well as exploring how Google 'forgets'. It also addresses the ways in which corporations are able to bypass us and our will to preserve online information. Google's algorithms possess the ability to decide what kind of information is worth keeping, as information is classified on a scale of importance. The work poses the question: if computers forget by themselves, what is going to happen if machines decide to erase humanity's histories stored in digital form? It also strengthened the title's connotations and *Test Execution Host*'s proposition that machines can function without us. The piece represents the aesthetic of digital decay, as well introducing the idea of data as monument, a concept which was further explored by one of the speakers at the symposium, Amanda Wasielewski.

A piece of Internet art was shown as a non-interactive website displayed on a monitor. The decaying process is actuated by an algorithm that caused data to deteriorate over the course of three and a half years: the lifespan of a burned CD-ROM. The process is of an immaterial nature, whereas the reference to the physicality of the CD-ROM is created by showing the piece of Net Art together with its material counterpart, a strategy that responds to ideas of media as environments (Cox and Lund, 2016; Braidotti, 2018). Even if the created content is human – the work addresses memory, storing and archiving in the digital age – its deterioration unfolds over the layers of contemporaneity that are present in the exhibition narrative.

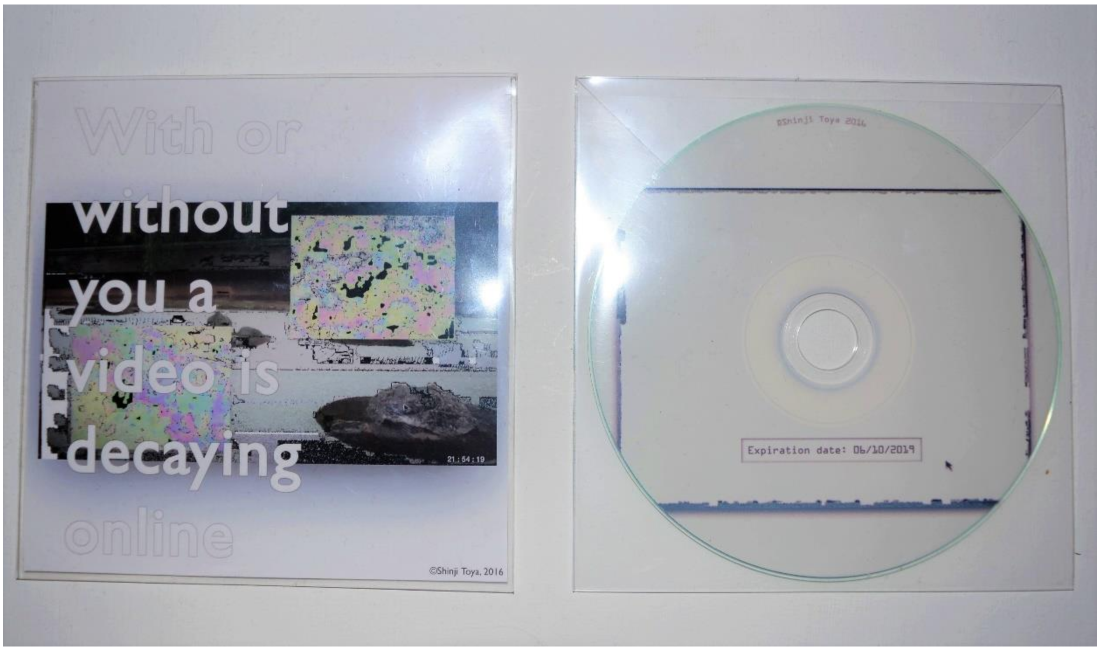
With or without you a video is decaying online
21:54:19
©Shinji Toya, 2016
©Shinji Toya 2016
Expiration date: 06/10/2019

Figure 17. Shinji Toya, *3 Years and 6 Months of Digital Decay* (detail), 2016-2018. Installation shot, The Holden Gallery, 2018.

The voiceover in Toya's work directly addressed the viewers as a way to invite them to engage with the meaning of *3 Years and 6 Months of Digital Decay*. Distinctively computerised, it emphasised the sense of removal of human beings that emerged from the exhibition narrative. However, this element was not noticeable in a straightforward manner, as in some of the works human features appeared in a mediated form through Menkman's distorted facial features and Arcangel's Mario character, for instance. However, as the methodology chapter explores, in exhibition practice the presence of an audience is always implied. As the audience can observe a work rather than engage with it, a detached viewer added new possibilities for viewing Lee's work, for example, as any instance of human engagement with technology was removed from the installation.

The lack of human presence in the featured artworks was accentuated in Emma Charles' works. *Surfaces of Exchange* (2012) appears to explore the eternal nature of data centres. In these photographs, the focus is on the bleak and austere imposition of the data centre within an otherwise more recognisable human landscape. The idea of contemporaneity that shapes an understanding of digital decay is here addressed in terms of macro-histories: what will happen when the Internet becomes obsolete? The title played a role in interpreting this work, as in human history we have yet to witness such a shift in infrastructure. Even if the transition to a newer system occurs over a period of time, the amount of physical materiality that will eventually have to be discarded would contribute to dismal futures.

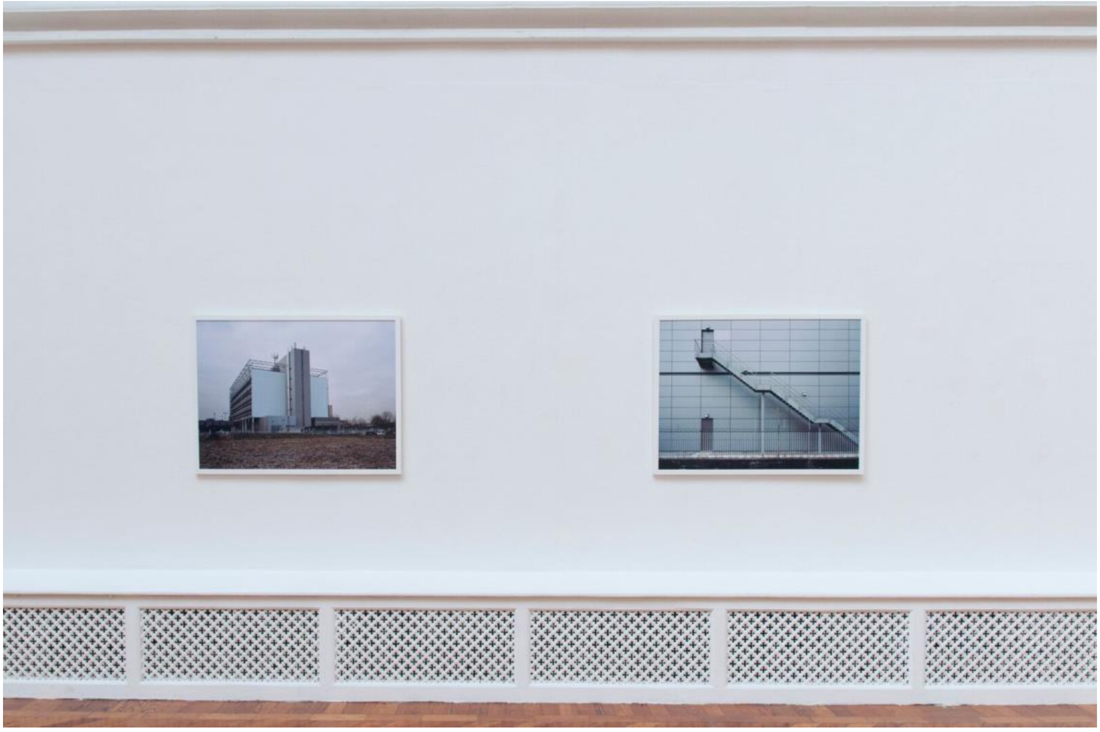

Figure 18. Emma Charles, *Surfaces of Exchange*, 2012. Installation shot, The Holden Gallery, 2018.

Surfaces of Exchange explores a data exchange centre in London. The work addresses the vastness and the impenetrability of the 'architecture of economics' (Charles, 2018). Decay is here explored through the apparent invisibility of digital materiality. These photographs show the ways in which the material processes of digital culture are hidden inside inaccessible buildings. In this instance, the data centre is also protected by wire. This also relates and refers to the difficulties of perceiving digital decay for us humans. *Surfaces of Exchange* visualises the same infrastructure that enables the existence of *3 Years and 6 Months of Digital Decay*. By now, the exhibition had introduced an understanding of digital decay which involves more than data and its processes, one that deeply influences the future history of digital culture.

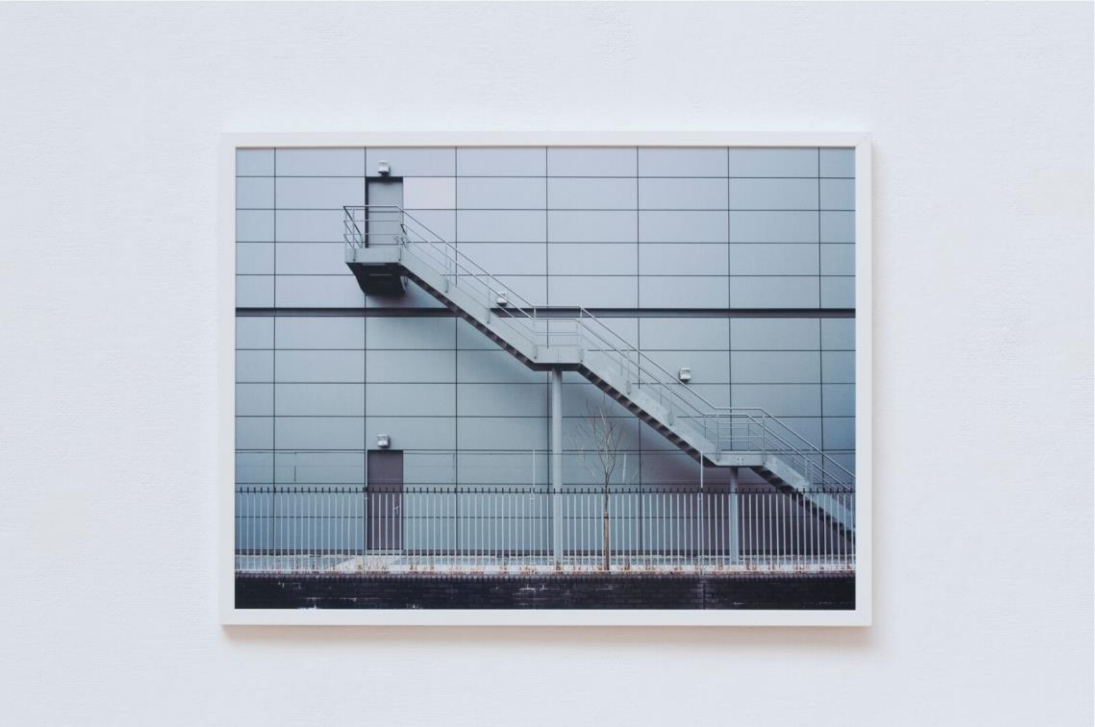

Figure 19. Emma Charles, *Surfaces of Exchange* (detail), 2012

Toya's was not the only work involving sound in the exhibition. The audience heard music coming from Cory Arcangel and Paper Rad's *Super Mario Movie* (2005) upon entering the space. Through sound, this temporal reference to the 1980s linked digital decay to the advent of digital culture, adding another temporal layer to the exhibition. Famous and widely recognisable, the Super Mario theme added a nostalgic quality to the exhibition experience. In reference to *Pro Tools* (2011), Arcangel's solo show at the Whitney Museum of American Art, Paul mentions the artist's ability to deeply engage certain layers of the audience: 'if you spent thousands of childhood hours thumb-jiggering your way through Mario's world, this piece had the ability to take you into an altered state' (2011:online). His engagement with technology explores 'video games and software for their ability to rapidly formulate new communities and traditions and, equally, their speed of obsolescence' (Lisson Gallery, Online). Arcangel's technological past differs from Howse's as it focuses on the very recent past of the 1980s when Super Mario Bros. was released in 1985, and during the 1990s when the Java applet Lake featured in *The Lakes* series was released in 1995 (Birne, 2016:online). Once inside the projection box, the audience found an obsolete NES (Nintendo Entertainment System) on the floor, playing a film on loop.

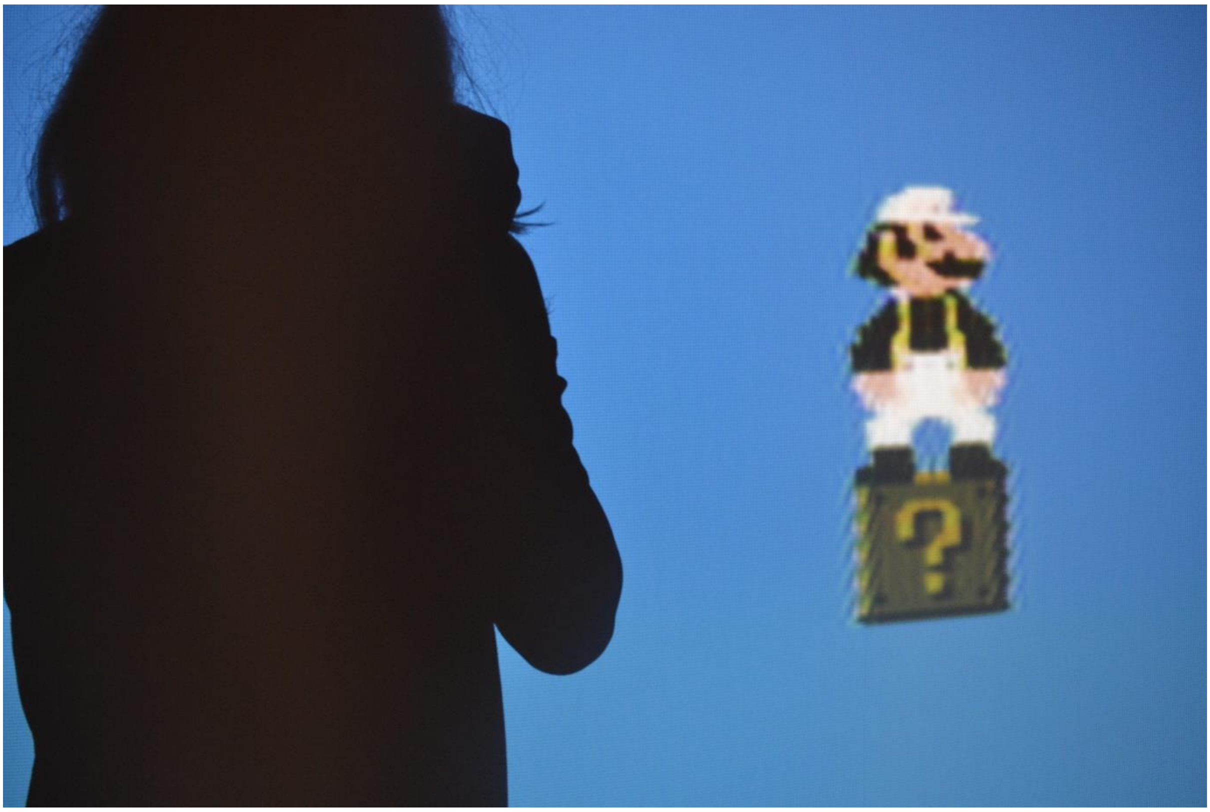

Figure 20. Cory Arcangel and Paper Rad, *Super Mario Movie*, 2005. Installation shot, The Holden Gallery, 2018.

The film represents the decaying process that a 20-year-old cartridge underwent. The narrative revolves around Mario's decomposing life and was created by the artist through the hacking of the cartridge as the action of hacking becomes a way to tell a story. The film begins with Mario standing on a block with a question mark, which indicates a sense of displacement. Messages keep appearing on the screen, adding irony to the exploration of digital decay. These relate Mario's life – and therefore that of the cartridge – to the passing of time.

> 'As a video game grows old, its content and internal logic deteriorate.'
> 'For a character caught in this breakdown, problems affect every area of life.'
> 'Poetry, diary day 1. Videogame history, mystery… [text corrupted].'

As the film continues, the graphics continue to deteriorate, and clouds appear. Mario's endless freefall dominates the screen. The messages are now truly corrupted and almost illegible. As a video game, the work should have required interaction. However, we could not interact with it as we would normally do. In the first instance, controllers were not present as a way to signify to the audience that there was something missing. Featuring *Super Mario Movie* in the exhibition directly responded to the curatorial strategy based on the absent presence of interaction. The message here was straightforward: we could not interact with the videogame because of digital decay.

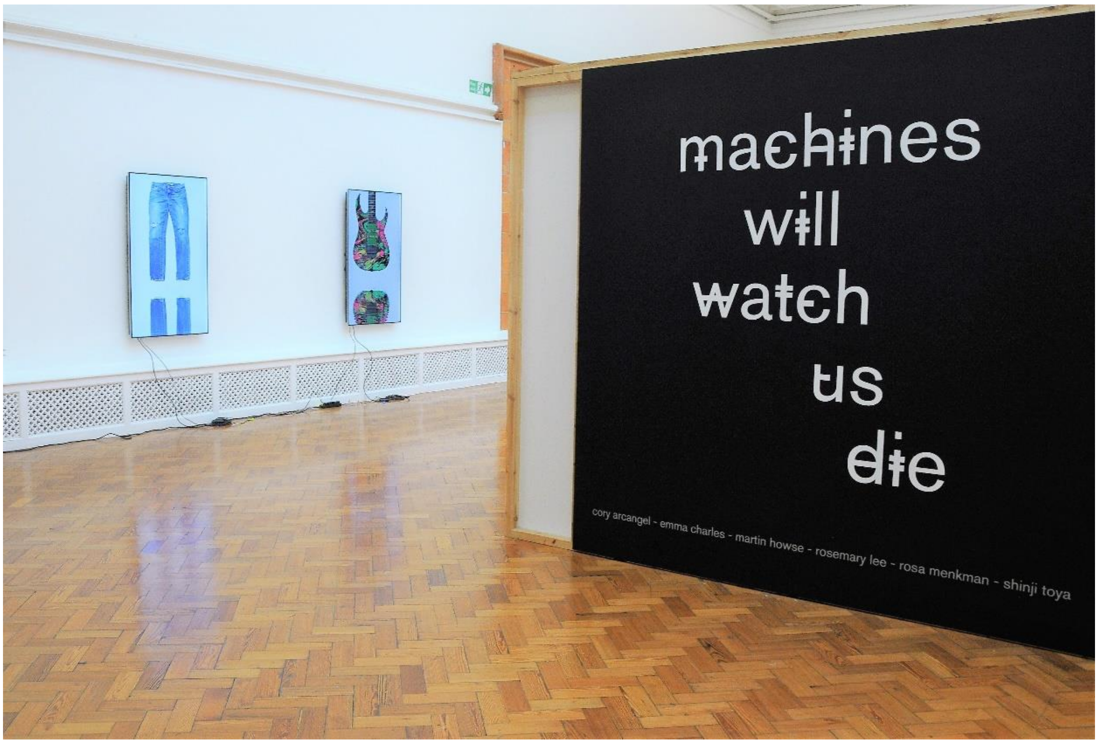
machines
will
watch
us
die
cory arcangel - emma charles - martin howse - rosemary lee - rosa menkman - shinji toya

Figure 21. Cory Arcangel, *Jeans/Lakes*, 2016; *Vai/Lakes*, 2014. Installation shot, The Holden Gallery, 2018.

> ‘Today's cutting edge is tomorrow's obsolete, so I tend not to make a distinction between new media forms and traditional media.’ (Arcangel in Ogrodnick, 2014:online)

Vai/Lakes (2014) and *Jeans/Lakes* (2016) were shown as portraits on 65” flat screen televisions. Arcangel’s reappropriation of recent yet historical software – a futile subject for portraits – provided a humorous take on the historicity of digital culture.[81] This humorous response, which also characterised *Super Mario Movie*, provided alternative readings to the dystopian scenarios denoted in the title. *The Lakes* series, of which *Vai/Lakes* and *Jeans/Lakes* are two examples, explores the ways in which the digital is affected by time, as the Java effect is ‘redolent of the adolescence of the Internet, [reminding us] of the rapid, tandem evolution of technology and taste’ (Rivers Ryan, 2014: online). Both works manifest the paradoxical nature of digital devices. The obsolete applet appears to be frozen in time. The screens will be updated, but the Lake applet, once considered state of the art software, has now entered the history of digital culture. Their quick turnaround condenses their shelf life and most students at the Manchester School of Art did not know what an applet Java Lake was. They recognised Mario, as the videogame was reprogrammed for more recent Nintendo consoles, but not the Apple Java Lake. For most, this was technological history that needed to be explained as they may have been unfamiliar with the applet due to their age. *The Lakes* thus appeared to be a portrait of digital history frozen in time, while *Super Mario Movie* was recognised by different generations who have experienced it in updated forms. Now a dated effect, it was hi-tech when the Internet phenomenon exploded, and people were first experimenting with building websites on their personal computers.

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[81] In his review for *currentmood* (New York, 20 May-2 July 2016), William Davie describes Arcangel’s work in *The Lakes* as ‘The physical works that appear on the wall behave like overindulged artefacts or caricatured versions of themselves’ (Davie, 2016: online).

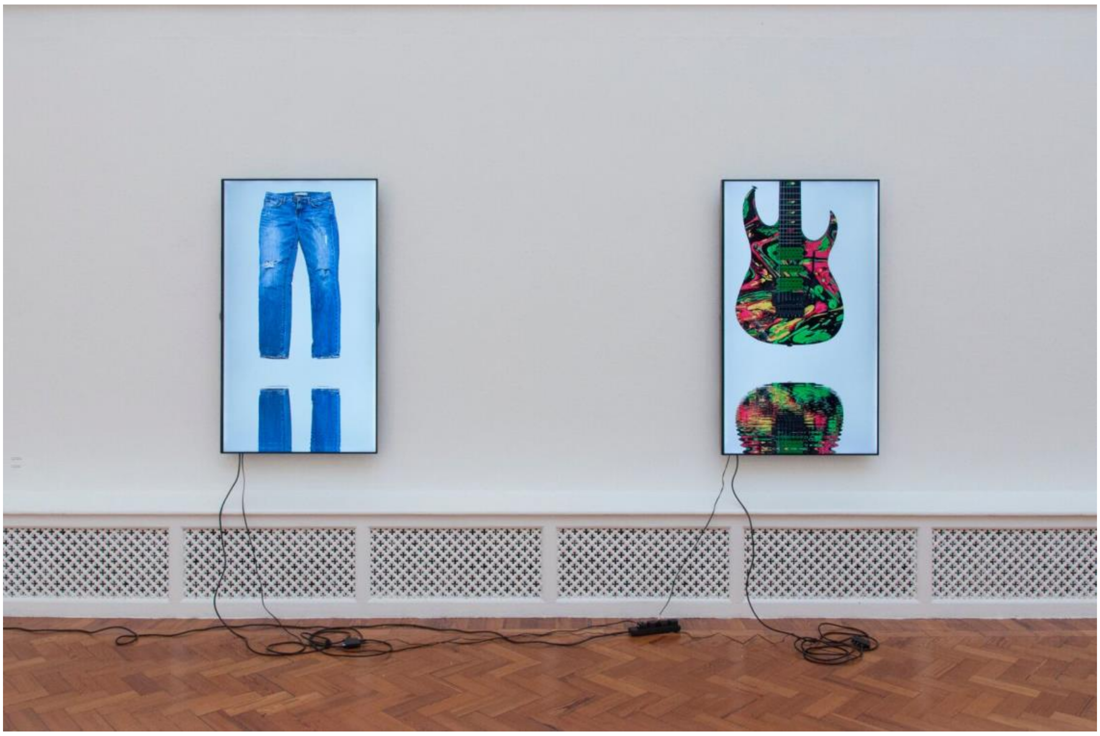

Figure 22. Cory Arcangel, *Jeans/Lakes*, 2016; *Vai/Lakes*, 2014. Installation shot, The Holden Gallery, 2018.

Arcangel's aesthetic also contributed to emphasising the temporal notion of digital materiality pervading the exhibition. The monitors' cables, the media players, the Nintendo and its wires were all left on show. The projector was also visible, as it had to be positioned at a low level to guarantee that the required dimensions of the image were achieved. *Super Mario Movie* but also *The Lakes* – especially for those who 'surfed the Internet' during the 1990s – added layers of nostalgia to the exhibition experience. Reading other works in relation to these elements added to the sense of unease present in the space, as the quick turnaround of the culture of disposal affects both hardware and software. Viewers also commented on how the Super Mario theme[82] continued to remind them of the exhibition once they had left the gallery.

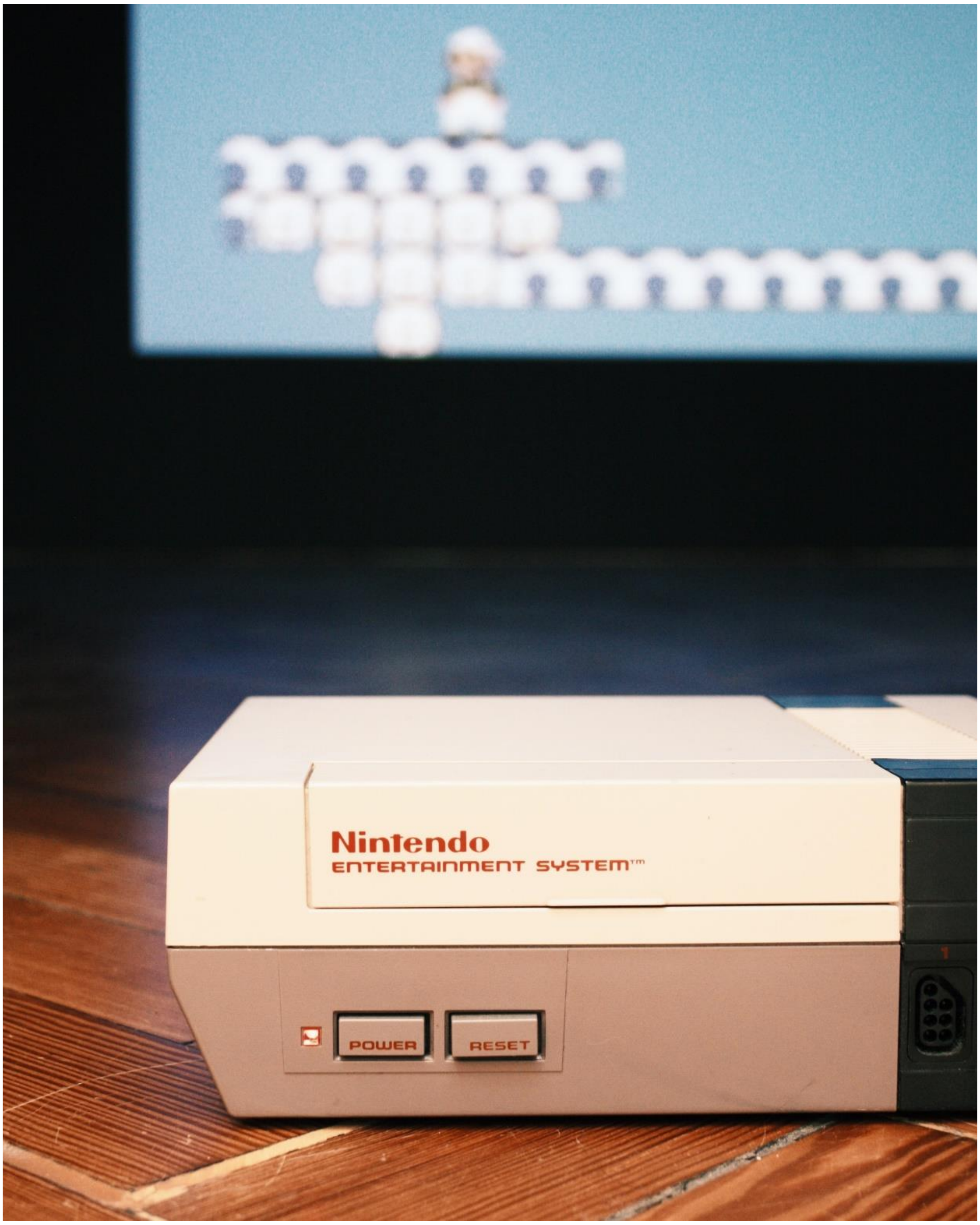

Figure 23. Cory Arcangel and Paper Rad, *Super Mario Movie* (detail), 2005. Installation shot, The Holden Gallery, 2018.

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[82] The artwork is available online and with sound here: https://www.youtube.com/watch?v=JN-WCA5-Qxs

It is interesting that the convergence of sounds influenced the exhibition experience in different ways: for some, the nostalgia emerging from *Super Mario Movie* instigated a heart-warming feeling, while others were indifferent to it. For instance, the Nintendo console is now obsolete, and the cartridges have decayed. All things digital will be phased out and will enter their state of zombie media, as addressed in the Introduction. It is one thing to discard a relatively small number of Nintendo consoles, another is the vastness of the digital infrastructure and the huge number of devices that continue to enter the market on a daily basis. Even if new, planned obsolescence will be the cause of their premature disposal, and these devices will be left to decay for what in human time is understood as forever.

The idea that technology is continuously abandoned emerged organically through the works. Rosemary Lee's *Molten Media* (2013-2018) provided the audience with a visual response to what will happen in the future due to the present practice of discarding still-functional or fixable devices in favour of ever-new technologies. Speculations on the future that relate to the decay of digital materials belonging to the past contributed to emphasising an understanding of digital culture that is distant from that of a connected and interacting world. It is through this feeling that the exhibition presented the audience with an alternative understanding of technology and technological advances.

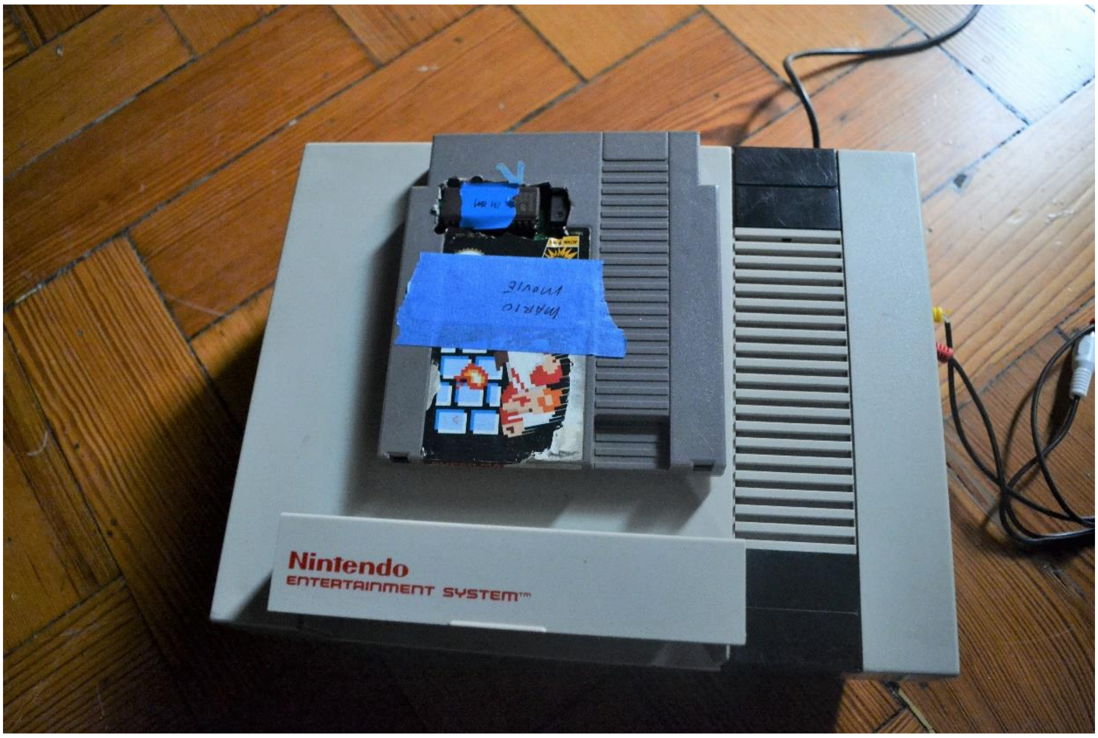

Figure 24. Cory Arcangel and Paper Rad, *Super Mario Movie* (detail), 2005. Installation shot, The Holden Gallery, 2018.

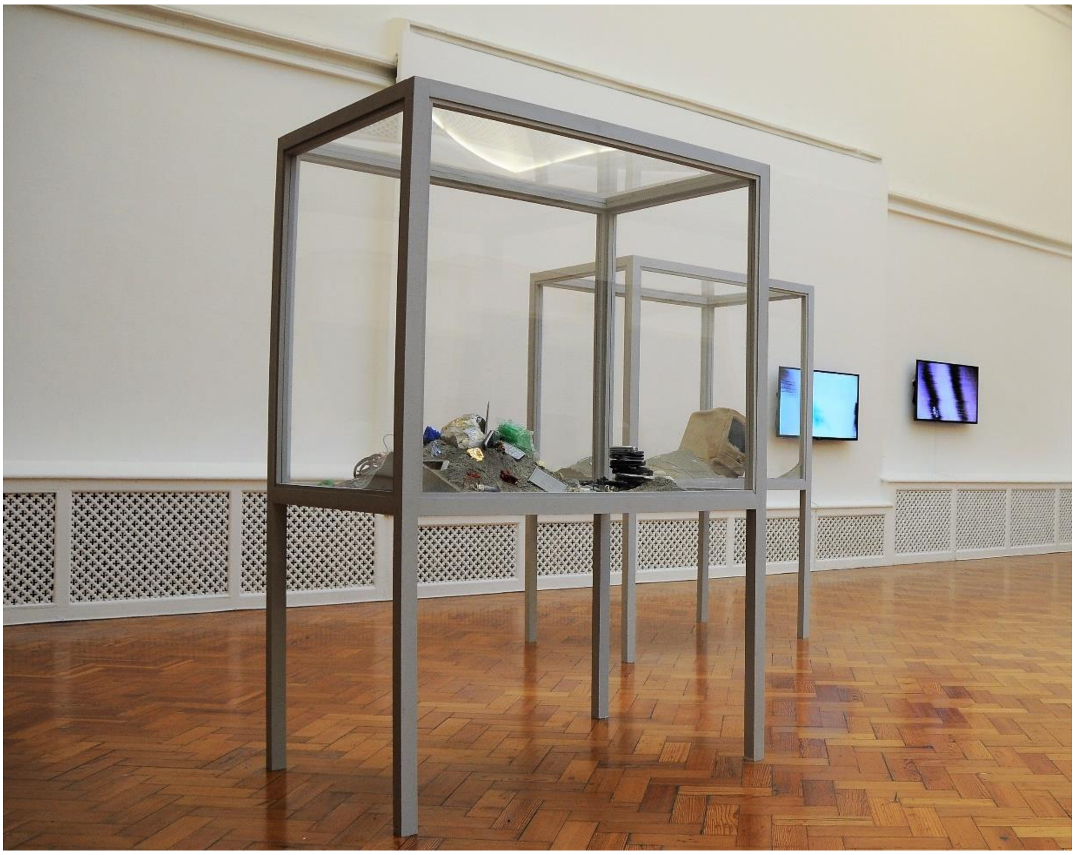

Figure 25. Rosemary Lee, *Molten Media*, 2013-2018 and Rosa Menkman, *To Smell and Taste Black Matter*, 2009. Installation shot, The Holden Gallery, 2018.

Molten Media (2013-2018) was installed between Arcangel and Menkman's works. The two vitrines were made specifically for the exhibition as the work represents a speculation on future archaeology, visualising what the artist refers to as future fossils. From the geological past of Howse's *Test Execution Host*, to the late 20th century referenced by Arcangel, Lee's work linked the exhibition narrative to an imagined distant future in which the common technological objects of today have become archaeological finds. *Molten Media* was featured in the exhibition for its ability to visualise deep time. Decomposed electronics were installed as if they belonged to a museum of the future, resembling the way in which artefacts belonging to previous civilizations are displayed in a museum of natural history, for example. Even if deep time reaches a future beyond humanity, the work emphasised the idea that digital materiality decays over durations that open up the contemporary present to futurity.

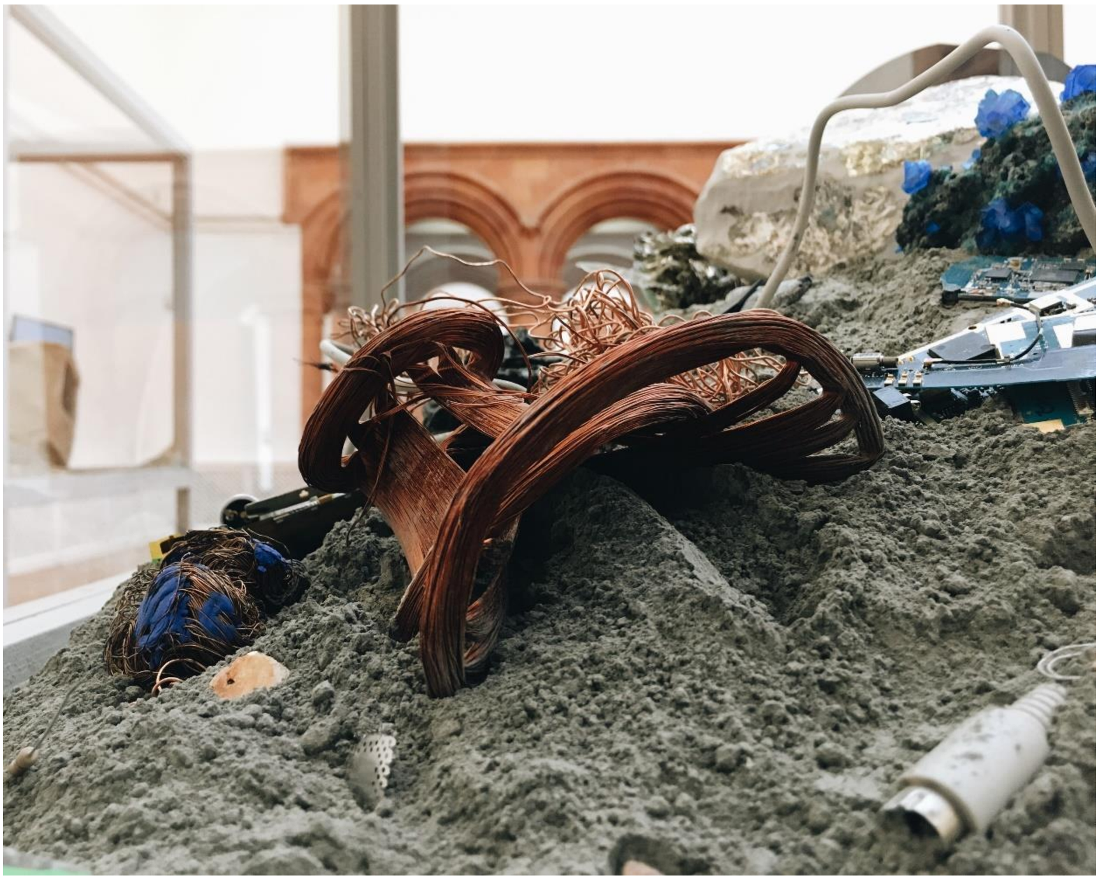

Figure 26. Rosemary Lee, *Molten Media* (details), 2013-2018. Installation shot, The Holden Gallery, 2018.

Lee's work also exemplified the absent present of interaction strategy, as the installation includes devices as artefacts devoid of software. What emerge from the sand are physical materials only. The connection between sand, representing Earth, and the digital emerges as the devices turn into mineral specimens. Melted and decomposed electronics, a mac computer, a keyboard and a mouse, for example, have survived the melting process that the artist performed in her apartment with the aim of speeding up the process of decay. Absent from the exhibition but present in the work is the toxicity of the fumes that the artist inhaled while melting the pieces down. In terms of its relationship with other works, *Molten Media* emphasised an understanding of the artworks themselves in terms of artefacts, opening up new interpretations for the other works as potential archaeological subjects. These aspects may not have emerged as clearly if *Molten Media* would have not been included, as it was perhaps the most straightforward work on show.

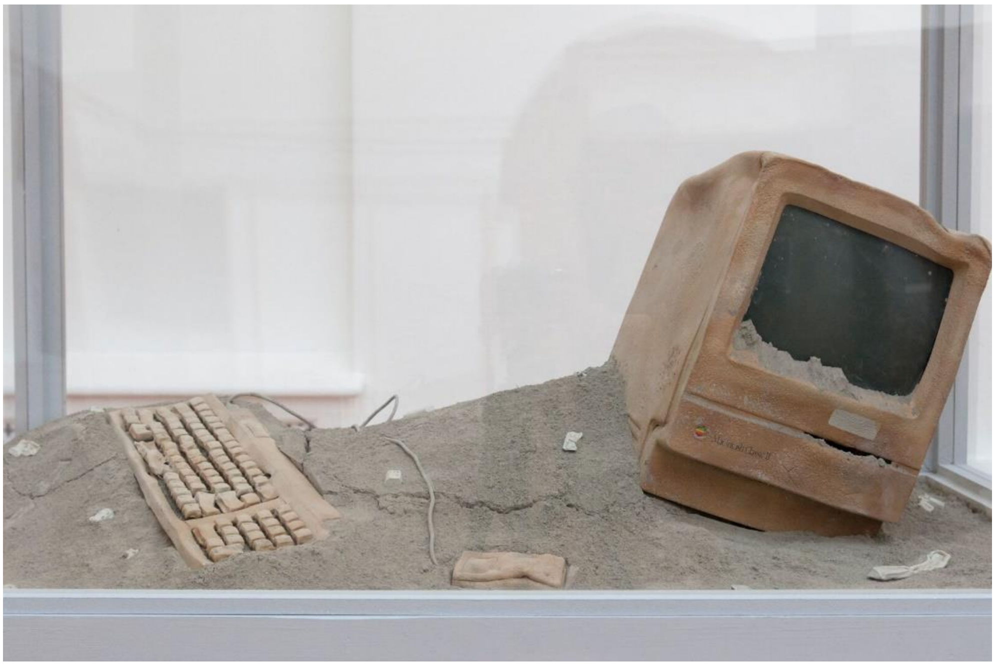

Figure 27. Rosemary Lee, *Molten Media*, 2013-2018. Installation shot, The Holden Gallery, 2018.

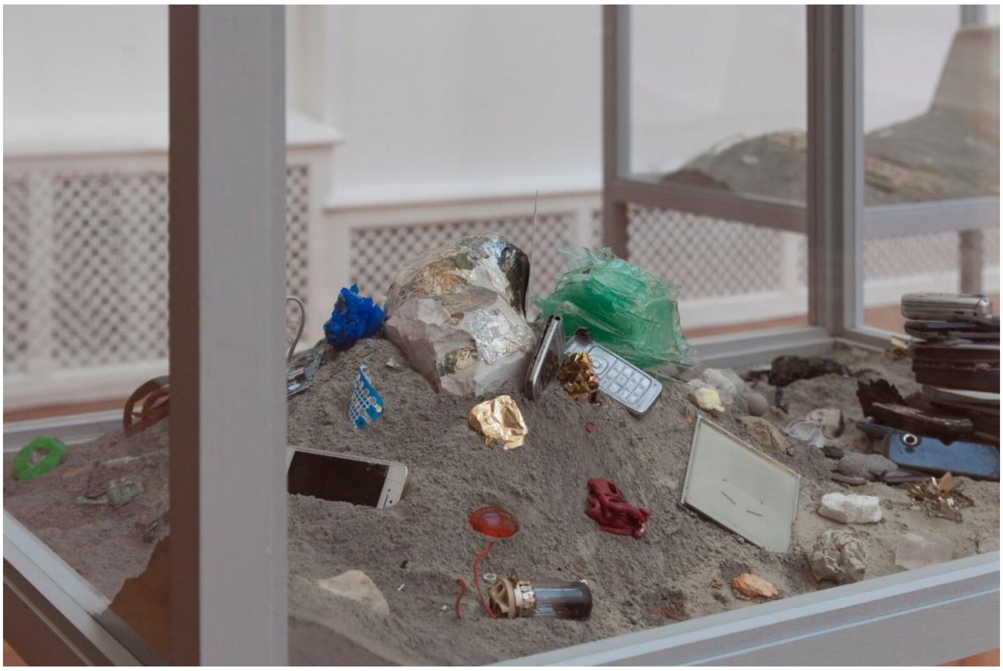

Figure 28. Rosemary Lee, *Molten Media*, 2013-2018. Installation shot, The Holden Gallery, 2018.

Rosa Menkman's *To Smell and Taste Black Matter* (2009) references interactive technology (Skype) in its non-interactive state.[83] The film shows a low-resolution recording of a conversation between Menkman and Extraboy. It brought immateriality back into the narrative as the two monitors represent two different stages of compression. They were installed at different heights and contributed to the exhibition soundtrack with a distorted yet gentle melody. The work's ambient sound emerges against the raw image on the monitor, which links the aesthetics with image failure not uncommon in analogue television screens. This kind of harmless nostalgia is combined with the realisation that in the future, Skype and the materiality that enables it will become obsolete and will be phased out, together with the data that was created with it. Even if the work is purely digital, its aesthetic creates a link between analogue and digital technologies. The LG monitors were chosen specifically for this work, and the logo was intentionally on display as a way to emphasise the need for a material interface in order for immateriality to function.

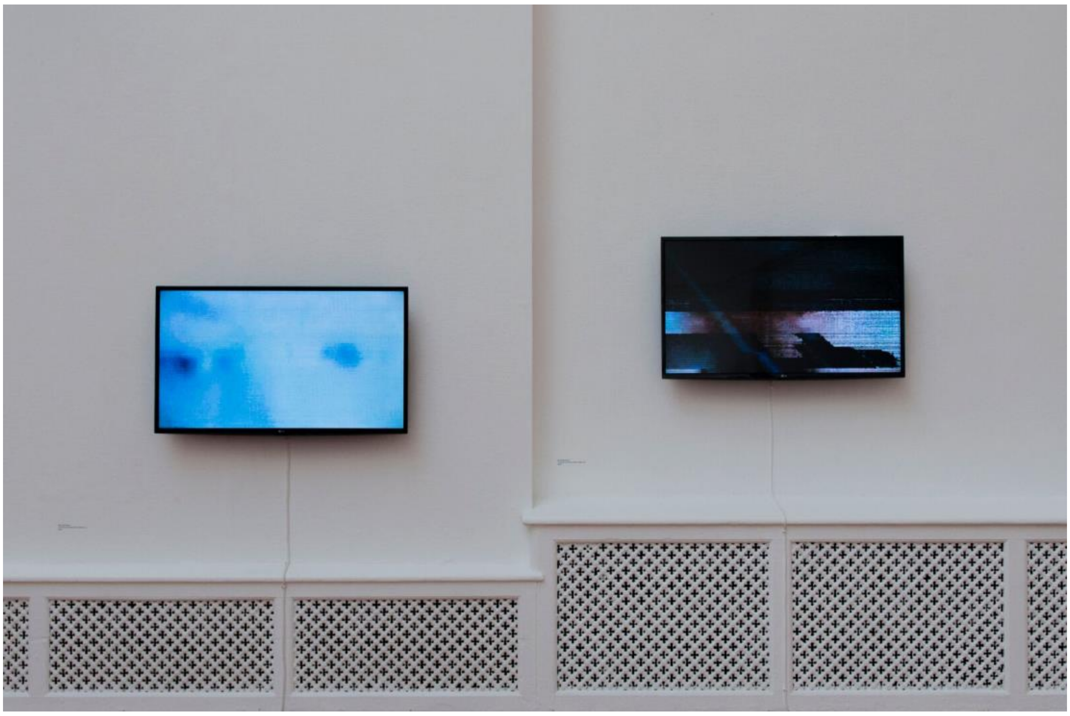

Figure 29. Rosa Menkman, *To Smell and Taste Black Matter*, 2009. Installation shot, The Holden Gallery, 2018.

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[83] As per all the other works featured in *machines will watch us die*, *To Smell and Taste Black Matter* (2009) has been interpreted in relation to digital decay. However, Menkman's work contributes to the artist's investigation of the glitch as the moment in which 'the digital flow fails to answer our expectation', 'an uncanny happening, a dangerous momentum of something other, unordered, unknown and unwanted' (Menkman, The Tipping Point of Failure, 2010:15).

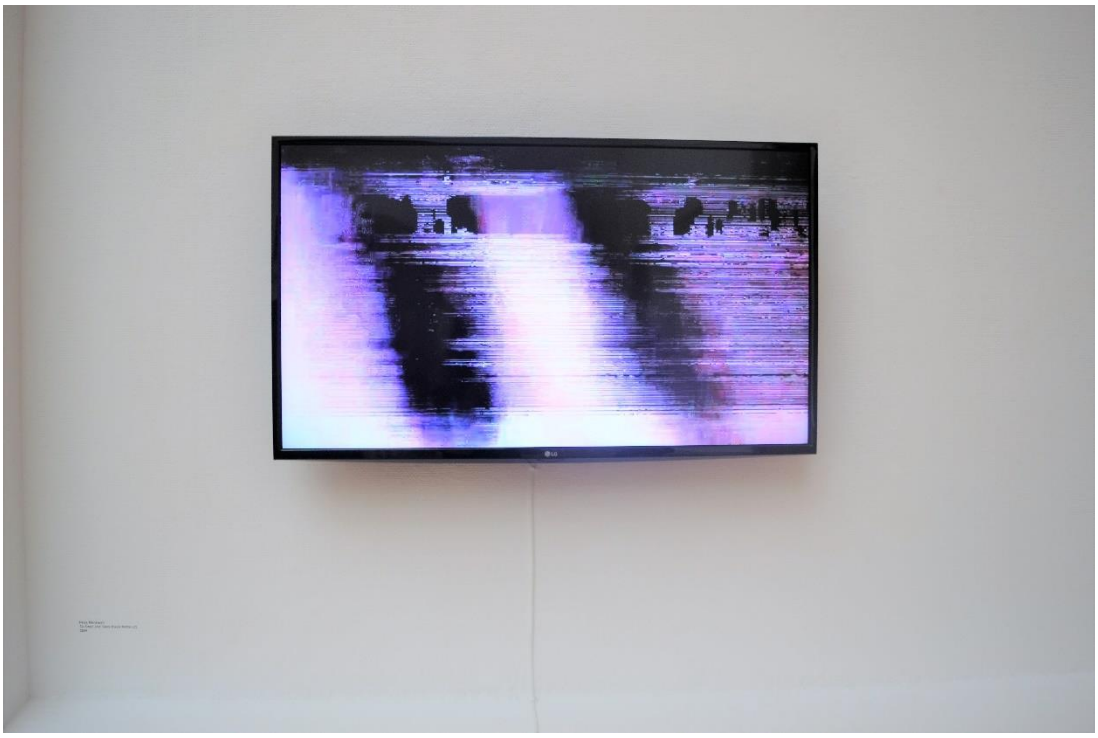

Figure 30. Rosa Menkman, *To Smell and Taste Black Matter* (detail), 2009. Installation shot, The Holden Gallery, 2018.

The final work featured in the show was Emma Charles' *Fragments on Machines* (2013), which was installed in the film space. The film's 20-minute narrative would differentiate it from the other works, while its loud and heavy sounds merged into the convergence of sounds which made up the exhibition soundtrack. The work explores a data centre in New York City and, as Charles describes it, it revolves around a: 'machine driven narrative, situating my research towards the materiality of the Internet' (Charles, 2018: online).[84] At the beginning of the film, we join the camera driving through a tunnel into Manhattan, and eventually emerging inside the data centre. The first noticeable image is a leaking floor. The work is divided into three sections: *Metropolis*, *Servers* and *Flood*.[85]

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[84] The interview is part of the Young Artist in Conversation series (YAC). Here, Charles describes the work in terms of materiality of the Internet, high finance and machine power. The text also contextualises *Fragments on Machines* in relation to Charles' practice. It can be accessed here: https://youngartistsinconversation.co.uk/Emma-Charles

[85] The piece was filmed in New York following the floods in 2012.

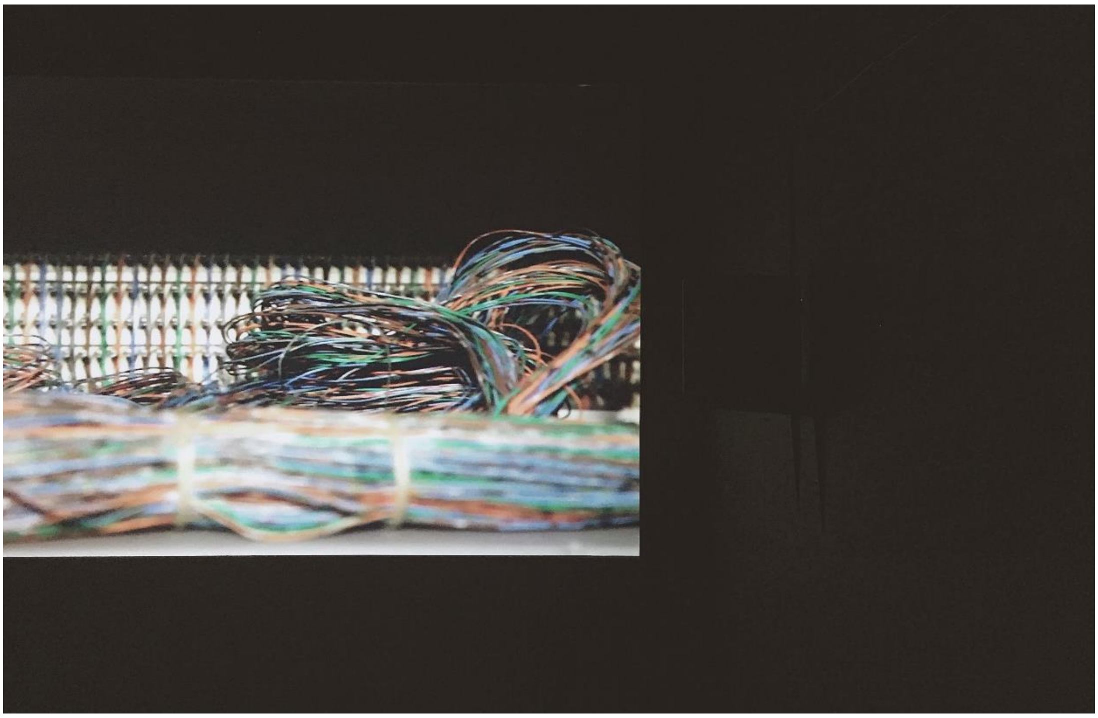

Figure 31. Emma Charles, *Fragments on Machines*, 2013. Exhibition shot, The Holden Gallery, 2018.

Metropolis focuses on Manhattan. Barnaby Kay's voice-over emphasises the human/non-human dichotomy, which connotes the entire piece. The camera looks down at the manholes, constantly hinting at the role played by underground spaces in the processes of digital decay. The opposition between hidden spaces and the city's architecture accentuates that it is in the innerworkings of the data centre that decay takes place. The contrast between inside and outside spaces is also accentuated by shots that, from the inside, take us outside to a street inhabited by passers-by who are unaware of the location of the data centre as they are fully immersed in the city. At the end, we enter a luxurious building, only to discover it is the very building that hosts the data centre. Contrary to *Surfaces of Exchange* (2012), this data centre seems to be more accessible.

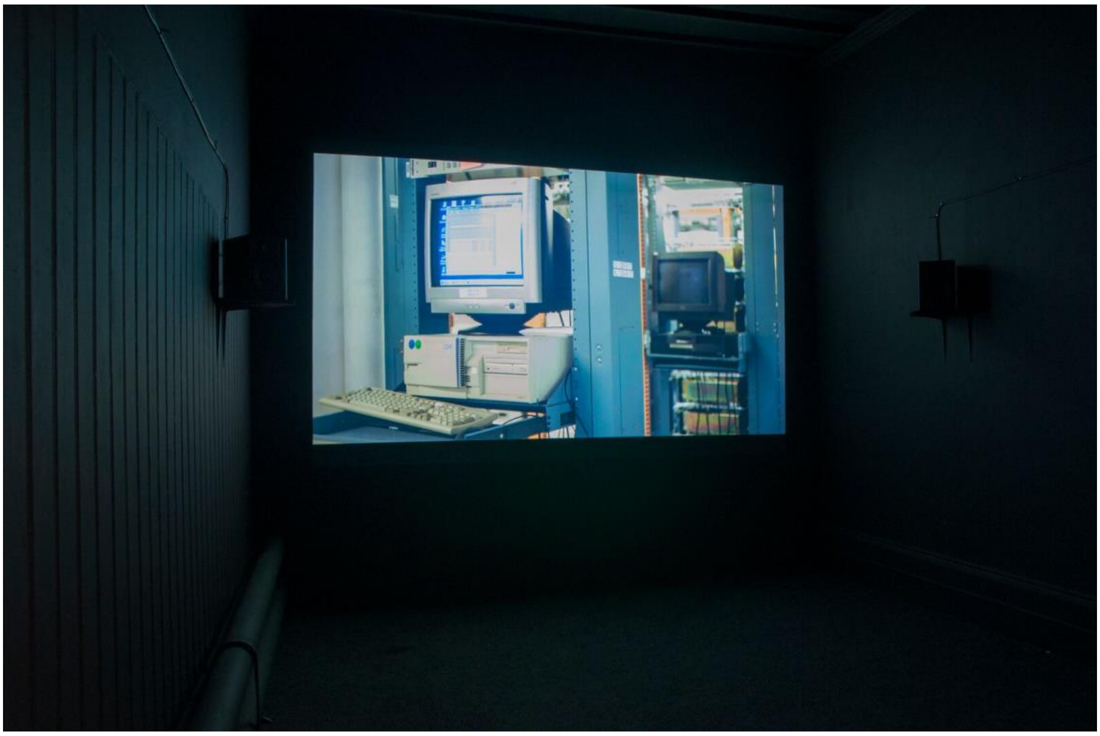

Figure 32. Emma Charles, *Fragments on Machines*, 2013. Exhibition shot, The Holden Gallery, 2018.

The second section, *Servers*, opens with images of many computers and servers stacked on top of one another. Two people are filmed while carrying out maintenance work. In this section human beings make few appearances. An IBM computer looks old and obsolete – it could belong to a museum. Human presence is scarce. A ladder and a chair, once used and now abandoned, symbolise that humans are not fundamental to the functioning of the place. Technology already appears to be old as masses of wires, degraded pipes and deteriorated walls are in bad condition. We then enter the cooling room, a noisy setting where the lack of human presence dominates the image. The aesthetics here resembles sci-fi scenography of the past. Another human being is now checking the functioning of a part. The contraposition between the voice-over narrative, representing the liquidity of data, and what we see – wires, machines, material components of all sorts – defines the image of the data centre as being heavily material in nature. Through the windows, the camera once again connects us with the outside world as we enter the last section of the film.

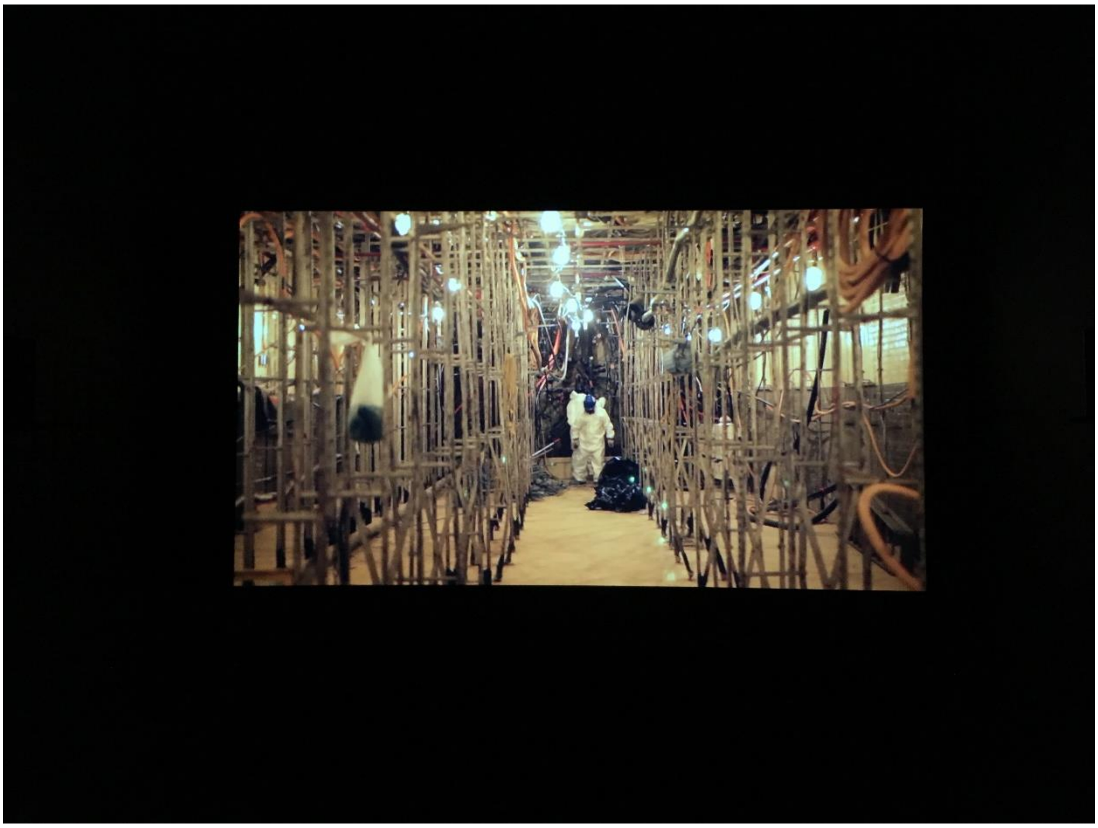

Figure 33. Emma Charles, *Fragments on Machines*, 2013. Exhibition shot, The Holden Gallery, 2018.

In *Flood*, the final segment, a connection is created between the fluidity of data and the river, which also represents ephemerality and the passing of time. We are outside, looking at the Manhattan skyline before we go back inside. The walls have not been well maintained or restored after the flood. At this point, we go back to the beginning of the film: leaky floors, rotten cables and men, who are wearing protective clothing, masks and gloves, are inspecting the space. Their attire signals that some kind of danger is involved: the wires' plastic protection is broken and left unwrapped and everything looks precarious as the fire alarm is triggered. *Fragments on Machines* questions digital materiality in terms of its value in the current financial system. When the latter decides that the digital infrastructure is no longer worth maintaining, how will we dispose of all the heavy machinery, cables and wires that the film brought to our attention? What will be the consequence of their decay? It is only at the end of the film that we learn that it was shot after the 2012 New York floods (Hurricane Sandy). This accentuates the idea that digital decay is a process defined by intra-acting entities that are not only human.

3.2. Elements of research beyond the exhibition

3.2.1. The catalogue

The multidisciplinary catalogue provided access to content which explores *machines will watch us die*'s themes from different perspectives. It was designed for those layers of audiences that wanted to further explore digital decay through different lenses: media theory, science-fiction and art practice. For instance, even if the environmental was not introduced as a main theme in the exhibition, not acknowledging the link between digital decay, e-waste and obsolescence in the Anthropocene would have proven to be a limitative choice. The catalogue also continued the dissemination of this study as it represents another layer of the curatorial.

The catalogue also addressed elements that emerged from the gap between curating and the curatorial. For instance, budget and funding restrictions affected the possible inclusion of a new version of *Mineral Vision* by Gil-Fournier, as addressed in the methodology. *Mineral Vision* fit the exhibition rationale as it addresses processes of decay by revealing the fragility and instability of digital technology's physical materials. However, I wanted the artist to participate, regardless of the unsuccessful funding bids, and invited him to contribute to the catalogue with an essay on machinic vision, 'Solar landscapes. Soil, image and the interventions of vision'. His participation was relevant to the research, as his essay offers insights into machines' ability to watch and witness different aspects of humanity and our understanding of the world.

The catalogue was conceived as a publication accompanying the exhibition as well as a collection of writings existing in its own right. Its content supported the exhibition and responded to the awareness that some of the layers of the exhibition could not have been accessible to all. Each element of the catalogue, together with the other elements of the curatorial set, worked together towards fulfilling the aim of this study, exploring a materially-oriented notion of digital decay through the curatorial. My essay contextualises the relevance of the exhibition in the contemporary, highlighting the importance of discussing digital decay in terms of the culture of disposal, obsolescence, human memories and futurity. It also contextualises digital decay within studies on immaterial preservation strategies, as well as distancing the exhibition from these. The text then goes on to relate digital decay to the convergence of temporalities present in the exhibition. It looks at the title and its role in shaping the notion of decay, as well as mentioning some of the themes that emerged in the research exhibition: inquiries into collective digital memories; a temporal dimension of digital infrastructure; and deep time, for instance. As with the rationale, I did not want to provide the viewer with a list of themes to look out for. Rather, I wanted the catalogue to contextualise the exhibition, as well as offering a framework from which new possibilities for exploring digital decay could arise.

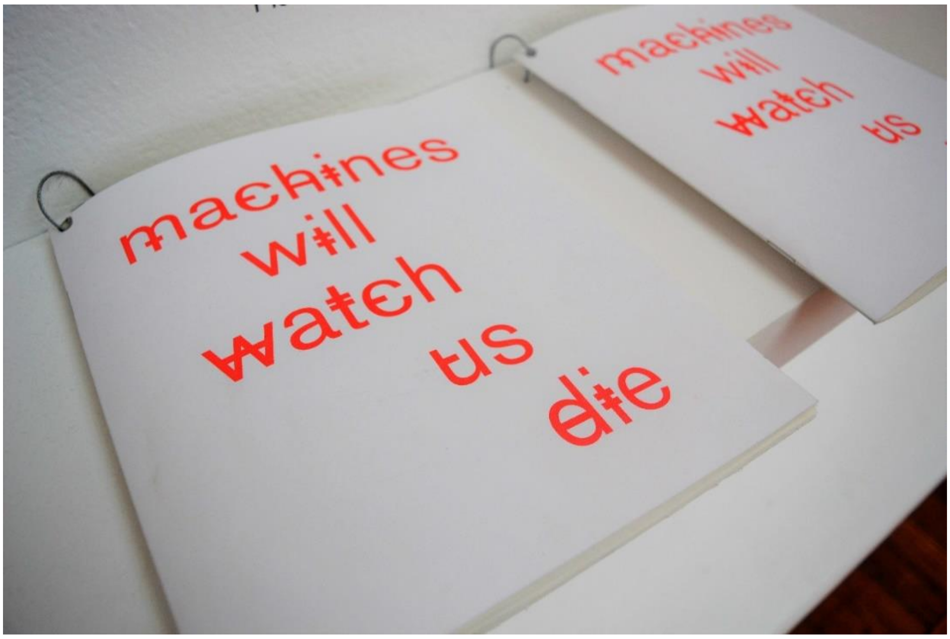

Figure 34. The catalogue.

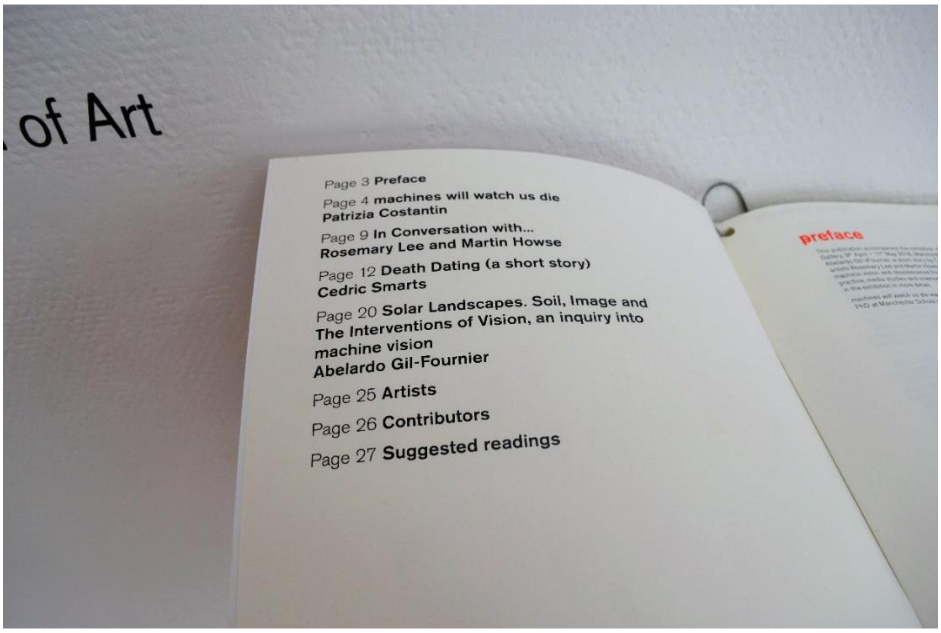
Page 3 Preface
Page 4 machines will watch us die
Patrizia Costantin
Page 9 In Conversation with...
Rosemary Lee and Martin Howse
Page 12 Death Dating (a short story)
Cedric Smarts
Page 20 Solar Landscapes. Soil, Image and The Interventions of Vision, an inquiry into machine vision
Abelardo Gil-Fournier
Page 25 Artists
Page 26 Contributors
Page 27 Suggested readings

Figure 35. The catalogue (Index).

The essay also includes an analysis of the works to introduce the viewer to the various elements involved with processes of digital decay: obsolescence; technological progress and future fossils; videogame cartridges and consoles; data centre and the presence of decay within the urban landscape; the Internet, algorithms, software and the technological device itself; geological materials as the enabler of digital culture, for example. The role of sound is also mentioned in relation to anxiety and nostalgia, and the absent presence of interaction – which was not referenced in the rationale – is mentioned here and at the end of the text to signify its importance in experiencing digital decay. My contribution to the catalogue was written by keeping in mind that most viewers engage with a catalogue after they visit an exhibition. This is also why it includes elements that relate to the exploration of decay in a wider context – to stimulate further discussion and open up new interpretations of the subject – as well as a description of the works, which illustrates succinctly my curatorial vision for the viewer to reflect upon and perhaps compare with their own take on the exhibition.

The choice of making the catalogue multidisciplinary was based on the conviction that fiction and different fields would be able to explore digital decay beyond the curatorial and the research exhibition. The introduction of the fields of media studies and literature to the catalogue, as well as inviting two of the artists featured in the exhibition to share their reflections on *machines will watch us die*, offered a different take on digital decay that enriched the curatorial study. Manchester author Cedric Smarts (Craig Smith) contributed to the catalogue with a science fiction short story. In 'Death Dating', a community of suburban androids battle planned obsolescence by sabotaging updated models introduced into the community. With the help of a custom droid named Veronica 9, Dawson 10 attempts to survive a newly developed sense of self-preservation in order to avoid the prospect of becoming e-waste. 'Death Dating' invites a reflection on digital decay in terms of how it could be experienced by androids, thus highlighting the non-anthropocentric nature of the subject, which also opens up alternative readings of digital decay in relation to issues of the Anthropocene. Abelardo Gil-Fournier's essay, 'Solar Landscapes', explored machinic vision, thus expanding on agency, ways of seeing and materiality. His essay indirectly discusses the title, which represented an important element in setting the tone for the audiences' exhibition experience. The catalogue also included an interview with participating artists Rosemary Lee and Martin Howse, which expanded on the artists' own practice, while also discussing ideas such as materiality, decay, deep time, immateriality, and a reflection on what the title meant to the artists. The interview also offers insights beyond my own to contextualise their work both within the exhibition and other discourses which emerged from the catalogue. Another layer emerged from the perspective of two artists that were also featured in the exhibition, blurring the boundaries between the catalogue and the show itself. This is also true for the events that are analysed in the next section. However, the published catalogue exists as a thing in itself and will continue to exist even after the show and the events have ended.

3.2.2. The exhibition tour, the artist talk and screening and the symposium

The role of the events played an integral part in *machines will watch us die*'s curatorial study. This was comprised of a set of elements, each dealing with slightly different subjects and linking the exhibition to different fields and areas of study. How these elements interlinked and responded to the aim of the research as a whole is addressed in the Conclusion. The events played a role within the curatorial gap, offering a space for discussing and stimulating reflections on all components of the curatorial project. It was fundamental to the research project as a whole that the artists were involved at more than one stage. Martin Howse and Rosemary Lee came to Manchester to install the work and participated in the opening. This presented an opportunity for the audience to talk to the artists. Emma Charles was the protagonist of a talk and screening, while Shinji Toya participated in the symposium. My role during the opening, the exhibition tour and the talk and screening was that of facilitating the audience to engage in conversations with the artists and discuss the themes of the exhibition. However, for the symposium, my role was limited to chairing the discussion rather than being one of the protagonists. This allowed space for other approaches to emerge, opening up further discussion in relation to the participants' responses to the call for papers. The artists' presence contributed to *machines will watch us die*'s set of layers throughout, opening up ways of understanding their practice that go beyond my curatorial vision.

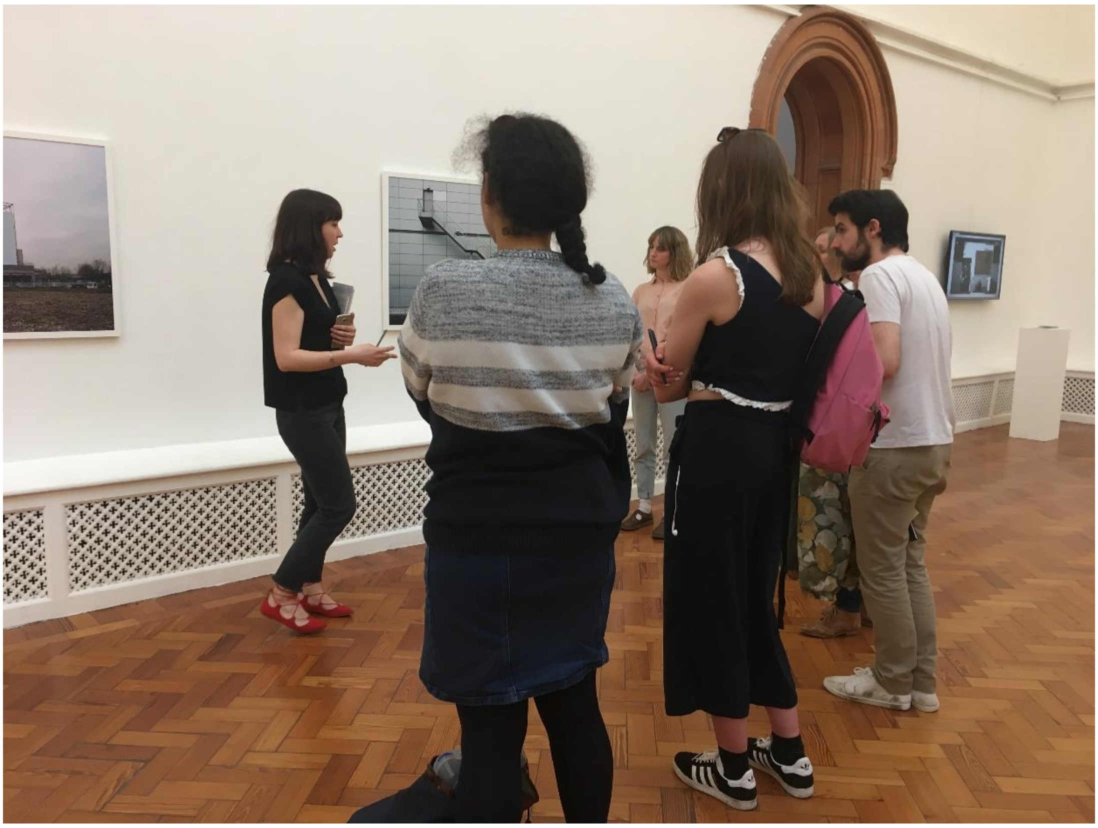

Figure 36. The exhibition tour, The Holden Gallery, 19th of April 2018.

During the exhibition tour, I noted that most questions and comments arose at the beginning. The conversation began with enquiries concerning the way in which Martin Howse's work functioned. Curiosity arose regarding the *Surfaces of Exchange* by Charles and *The Lakes* by Arcangel. The audience was most interested in finding out more about the works that explored digital decay indirectly. Comments regarding the convergence of sounds were contrasting. Some appreciated the ways in which sound participated in their own experience of the exhibition, welcoming the ability of *machines will watch us die*'s soundtrack to engage but also distract. Others found the presence of sound quite irritating, to the point that they could only reflect on the exhibition once they had left the space.

Figure 37. Emma Charles at the artist talk and screening, The Holden Gallery, 8th of May 2018.

The discussion with the public at the talk and screening focused on Charles's understanding and exploration of digital materiality through an analysis of *White Mountain* (2016) and *When Objects Dream* (forthcoming). *White Mountain* documents a former Cold War bunker that was turned into a data centre in 2008. The Pionen centre is located 30 meters underground, below the Vita Bergen Park in Stockholm. The film is saturated with science-fiction aesthetics and references to digital temporalities that span from data's exchanges to geology. Moreover, Charles' *When Objects Dream* continues to explore how material and immaterial interfaces connect with humans. In the film, a relationship between technology, the city and mineral resources is created, while the Kazakh landscape appears along traditional folklore stories. Both films address the association between different kinds of technological materiality, while also making tangible human experiences of digital interfaces. The focus on the difficulty of accessing data centres and what they contain linked the event to the material processes of digital culture, which are explored by the exhibition. The films were shown as part of a conversation between myself and the artist. The public were then invited to ask questions.

Her forthcoming work also generated curiosity in terms of how it relates to her works in the exhibition, and to how her approach to exploring digitality is evolving. The artist was also generous in sharing details about another forthcoming project which explores autonomation and agency in relation to online grocery shopping, with particular reference to Ocado. This event was able to open up an enquiry into the temporal nature of digital materiality in relation to other works by Charles'. As such, it was meant to invite a further understanding of the different approaches through which digital materiality can be explored in terms of contemporaneity. The discussion also focused on electricity as another material of technology, an element that also figures in Bennett's discussion on vibrant matter (2010), thus providing another link between the event and the conceptual framework of the exhibition, also addressed in terms of contemporaneity. Understanding Charles' view on *machines will watch us die* and its themes offered an alternative point of view for those layers of the audience who wished to expand their experience beyond the narrative conveyed by myself, the curator.

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Figure 38. Symposium: Keynote speaker Michel Goddard, The Holden Gallery, 11th of May 2018.

At the symposium,[86] after welcoming and contextualising the event, the participants were divided into two panels – 'Past, present and future histories: data, ruins and machines' and 'Material Performativity and Behaviours in (Post-)Digital Culture'. Between the first and second panel, Michael Goddard presented his paper 'Post-industrial Art for Post-Industrial People: Media Anarchaeology, Materiality and Expressive Machines'. Toya also participated in the symposium as a speaker. His presentation, 'Digital forgetting in digital art practice of system making', aimed at contextualising digital decay within his work.

The main themes which emerged were the exhibition as a tool for creating knowledge; digital forgetting and memory; data as a monument to the modern era; imaginary media and forgotten materialities; death and the post-Internet; technology's role in terms of engaging with exhibitions and how expressive machines may be able to rethink the dichotomy between human beings and technology. The discussion of these subjects would not have been possible within the exhibition, both in terms of budget and scope. With the exemption of Toya's paper, and as I myself did not present a paper, the symposium resulted in a collection of presentations which were linked to the conceptual framework of this study rather than the exhibition itself. The symposium was part of the curatorial set and helped to address certain themes that may have been lost due to the institutional limitation of curating, as explored through the gap. This event was purposely organised to feature on the last day of the exhibition. It was in fact meant to tie together the conceptual implications that emerged during the exhibition and events via conversations with the audience and further reflections on the research. It also contributed to disseminating the exhibition and catalogue internationally as the participants came from a variety of countries and institutions.

3.3. The audience and the curatorial gap in *machines will watch us die*

> 'We set up whatever we are able to set up in the moment, but are constantly aware that there is a huge gap between the urgent issue that we want to open up and what we are able to do within the protocol of displayed culture. … This is where I hold such a belief in the audience, as people recognise the gap and go to work in it, sometimes in a conscious way, sometimes in an unconscious way, but that gap is enormously active.' (Rogoff, in von Bismarck et al., 2012:24)

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[86] Details of the full programme can be found here: https://www.patrizia-costantin.com

The discourse generated between key research ideas and the works was shaped by the selection and position of the works themselves, and by the writing material accompanying the exhibition. As outlined above, some of the ideas and approaches – a temporal notion of digital materiality, contemporaneity, the post-medium and the absent presence of interaction, for instance – were not explicitly mentioned, but unfolded through the various layers of the exhibition in different ways for different audiences. However, the role that the differences between curating and the curatorial – the curatorial gap (Rogoff, 2012) – played in terms of audience experience is impossible to generalise and quantify. Over a period of weeks, I engaged in a series of informal conversations that were useful for comprehending the ways in which the curatorial gap emerged. As Sheikh explains it: 'all exhibition making is the making of a public, the imagination of a world' (Sheikh, 2007 in O'Neill, 2011:181-182). These informal conversations made me reflect on how my experience and understanding of *machines will watch us die* was being received (or not) by the audience.

In order to engage on a deeper level and draw out a more comprehensive understanding of the audience experience, I also discussed *machines will watch us die* with a group of MA students in Contemporary Curating. In the first instance, I introduced them to the research exhibition themes and approaches before giving them a tour of the exhibition. After the exhibition ended, I invited them to reflect on their own experience of the exhibition through the online portfolio, as I wanted their opinion on both the writing material and photographic documentation. The online portfolio was received positively as it revived their memories of *machines will watch us die* when asked to reflect upon it. Its design and format were also described as appropriate in terms of the portfolio's role of tying together and presenting the different facets of this study. For the same reasons, the catalogue was also well received.

The intentional presence of multiple sounds in the gallery was received as an unusual but interesting experience by the students. It was noted that even if a viewer had no desire to engage at all, they could not avoid the convergence of sounds. Sound was deemed as a significant element of their experience of *machines will watch us die*, which they also related to the sense of anxiety mentioned in the rationale. One of the students also noticed how the immersive environment created by sound almost made her feel like she was having seizures. The title was also well received and was described as very impactful upon entering the gallery. The typeface and the wall (white font on a black wall) also emphasised its dark tones. The students found the exhibition theme fascinating, and both the title and the rationale inspired interest and intrigue.

Some aspects of the rationale, however, felt a little heavy, which may have deterred some viewers from engaging with the topic. For example, the sentence 'In the Nineties, the rise of the Internet as a mythical site for the collective imaginary was accompanied by a pervasive excitement…' might have been a little inaccessible. The role of interaction (or better its absence) within the show did not come through as strongly. A student suggested that I maybe should have included it in the rationale since, once she was aware of it, she was able to see that it worked within the context of the exhibition. The visual binary opposition between the digital theme of the exhibition and the warmth of the wooden floor and Victorian architecture of the Holden Gallery also emerged as an interesting element, which I explained as another temporal layer within the contemporary nature of the exhibition.

Comments on the works were as follows: Emma Charles' work was particularly successful among the students, who also appreciated the chance to meet and talk to the artist during the event. Unfortunately, they were unable to participate with the symposium. *Fragments on Machines* responded directly to the themes of *machines will watch us die* whereas *Surfaces of Exchange* was more obscure. Nonetheless, the photographs and their placement allowed them to reflect on their role within the exhibition narrative, opening up connections between Charles' contribution and the other works. Martin Howse's work was also appreciated for its installation as it felt enclosed and private and its content was intriguing. However, one student commented that she was slightly disappointed as the work was not installed as it was presented in the exhibition at Perte De Signal (I showed them an image of this version during the talk prior to the exhibition tour). Cory Arcangel's *Super Mario Movie* was appreciated both in terms of visuals and sound. *The Lakes*, instead, were not as well received based on personal opinion, as one of the students stated. Rosemary Lee's *Molten Media* was considered an important work as it related most directly to the image that viewers might have of digital decay. Rosa Menkman's *To Smell and Taste Black Matter* was appreciated in terms of its concept as it introduced a day-to-day example of becoming decayed and lost. From a visual point of view, it was noted that the glitches on the monitor would resonate strongly with the viewer in relation to the exhibition theme. Shinji Toya's *3 Years and 6*

Months of Digital Decay was also appreciated as the voiceover created a sense of direct engagement between the work and the viewer.

When asked to discuss one strength and one weakness of *machines will watch us die*, this was the overall opinion: a forward-thinking exhibition which provided lots of material for reflection on a subject that they were yet to consider. It spoke to both the everyday and of much larger and deeper issues as it was an exhibition made of multiple layers. It was also noted that it was a very timely exhibition as investigations on digital materiality are gaining momentum. The main critique was that perhaps another work with both a strong concept and a beautiful aesthetic could have been placed in the main space. However, it was noted that it might have been difficult to find a work that embodied a strong aesthetic draw as well as a conceptual draw that would have fit with the gallery architecture. Also, due to the strength of the title and its allusion to death, a student would have liked to have seen more material contemplating mortality in relation to technology, such as a scenario where artificial intelligence is on par with – or is becoming stronger than – human intelligence. However, this last point is explored through 'Death Dating', the short-story included in the catalogue.

The multifaceted dialogue that *machines will watch us die* stimulated partook in a discussion on different takes on the materiality and temporality of the digital to strengthen, test out and further explore the theoretical foundations and methods on which the exhibition was built. All these elements responded to the curatorial gap as they were fundamental in developing the research that led to the exhibition. When the exhibition opened, its themes and approaches emerged through the works in a variety of ways. For instance, in the writing material, I often referred to the different temporalities that merge together as being a feature of the process of digital decay, thus referring to the idea of contemporaneity, as outlined when discussing the rationale.

A continued reference to temporalities that are dissimilar and yet connected to human timescale translated an understanding of history as non-linear to the exhibition narrative, further linking the latter to the conceptual framework of media archaeology. The works were positioned in a way that facilitated the juxtaposition of the seemingly opposing materialities and temporalities of the digital. However, the adoption of the idea of the artwork as time machine (Huhtamo, 1995) as a means to make visible the multiple layers of contemporaneity did not work as efficiently in practice as it did in theory, as it was an idea that was difficult to convey within the narrative. At the beginning of the curatorial process, the idea of the work as time machine was more central to the rationale. It was, however, taken out as explored previously. To the audience members that did not have the chance to come to any of the events or have a conversation with myself, these concepts may have become lost. For instance, even if the absent presence of interaction did not translate as a constitutive element, there was potential for it to play a role in their experience on a subliminal level. The title, to which most people responded to with interest, also suggested that machines are able to act on us and interact with us and will do so after the decline and death of humanity, as machines do not decay in human time.

However fundamental, the decision of eschewing interactivity from the exhibition may not have translated to the viewer as well as I had wanted. For some viewers not to realise that all the technology in the show lacked interaction is not an entirely negative result, as it perhaps inadvertently contributed to its sense of unease, which was instead mentioned in the rationale. The humorous take on nostalgia that emerged from Arcangel's work paradoxically emphasised the sense that a dystopian allure filled the gallery, perhaps suggesting that interaction was lacking from the exhibition. The wires, media players and devices left around – which still involved immateriality – played as much of a role as works that did not involve information.

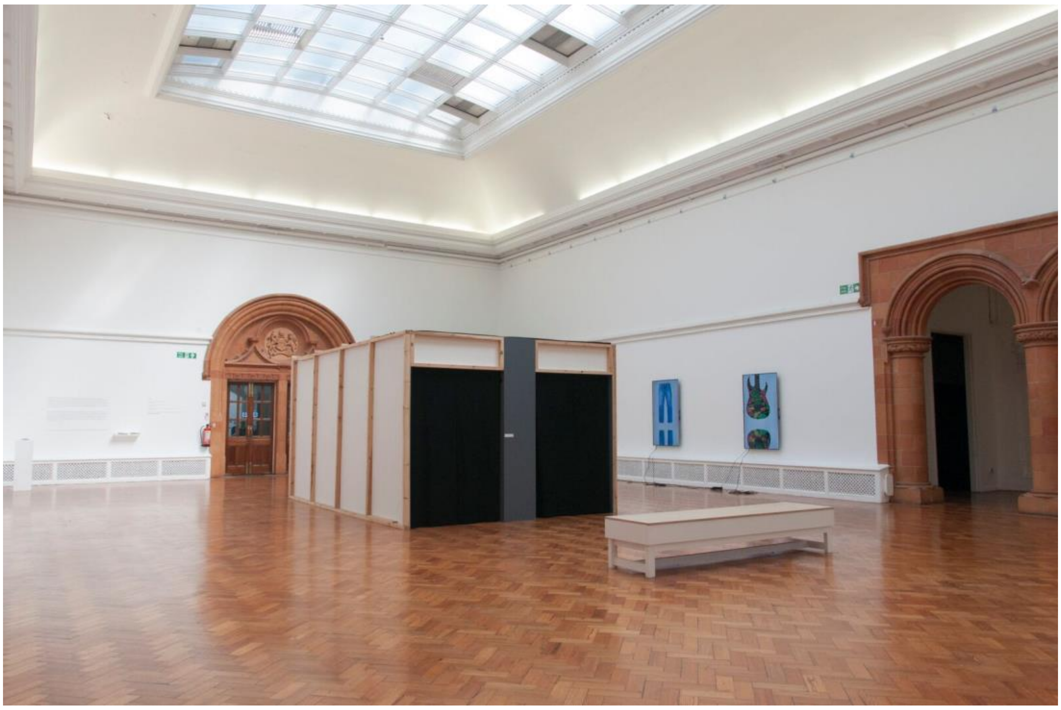

Figure 39. *machines will watch us die*, exhibition shot, The Holden Gallery, 2018

All of these elements responded to the curatorial gap and worked together as the multiple layers of the curatorial framework. As a methodology, the curatorial was considered a form of investigative practice and was able to make epistemic claims as well as testing out curatorial strategies for digital art responding to the material turn. This chapter combined the different layers of *machines will watch us die*. The centrality of the exhibition in the exploration of digital decay is outlined through the walkthrough, which represents a curatorial analysis that takes into consideration my own understanding of the exhibition narrative and its aspirations, and how these were informed by various conversations with the audience. However, it was not always possible to translate the theoretical framework of *machines will watch us die* into the exhibition. The analysis of the rationale and the walkthrough have highlighted the difficulties of embedding notions of contemporaneity and intra-action, for instance, into the exhibition. An exhibition tour, an artist talk and screening, and a symposium were organised as a set of elements which also addressed the curatorial gap, as well as partaking in the curatorial study on digital decay.

Ultimately, all of these elements responded to the choice of addressing digital decay through a post-medium approach to digital materiality. Interestingly, they also suited the Victorian architecture of the gallery, contributing to the exploration of digital decay and digital culture beyond the linear time of history (that of the Victorian age) and technological advances. It could be argued that the Victorian elements of the gallery architecture contributed to visualising the different temporalities at play in the exhibition. A further discussion on the results of revealing digital decay through the post-medium approach outlined in the methodology chapter is included in the conclusion.

Conclusion

The aim of this PhD has been to reveal a materially-oriented notion of digital decay through the curatorial project *machines will watch us die*. I have explored the idea of digital decay through the different layers of the curatorial, which were carefully designed to draw in different audiences. The research exhibition played a major role in the investigation and was supported by a catalogue, an exhibition tour, an artist talk and screening, and a symposium. The framework of the research exhibition was adopted for its ability to prove and disprove a thesis (Latour, 2010; Sheick, 2013), namely the conviction that a certain approach to curating was necessary to present digital decay in all its facets. Its development and application also responded to the inclusion of artistic-based research, which focuses on the processes and histories – past, present and futures – of digital materiality.

This study proposes that there is the need to go past the dichotomy between the material and the immaterial, which characterises the curation of digital art and museum studies on preservation strategies, for which digital decay is an issue rather than an opportunity to explore digital culture's entanglements with contemporaneity. In carrying out the research, multiple strands were combined into the curatorial. A media archaeological perspective, for instance, was applied to this form of investigative practice (Rogoff, 2012). This involved a reflection on how the research exhibition and the curatorial can be informed by the material turn (Brown, 2010). The introduction of concepts belonging to the field of media archaeology, such as medianatures (Parikka, 2012) and zombie media (Hertz and Parikka, 2012) for example, has blurred the boundaries between notions of materiality and immateriality. The potential for rethinking curatorial strategies for art which is embedded in digital materials thus emerged. *machines will watch us die*'s curatorial strategies were developed as an alternative to medium-based approaches to curating digital art (Paul, 2009; Cook and Graham, 2010) following the conviction that these have become outdated.

The adopted post-medium approach was based on the radicant (Bourriaud, 2009). Bourriaud's approach shares it relational nature with the curatorial and provides the exhibition with the means to rethink the medium-based fuelled dichotomy in order to comprehensively explore new materialities. Also, as Bourriaud (2009) identifies, the effects of digital culture are best analysed by artists who do not make use of technology in their practice. In the context of the exhibition, this sensibility was repurposed to refer to those artists who rethink common understandings of the digital medium and are able to reveal the material processes hidden behind the proliferation of networks. Bourriaud shares with Cox and Lund (2016) the same sensibility towards exploring how the advent of the digital has impacted on our understanding of time. The radicant was adapted to the curatorial as it shares affinities with the conceptual framework of the research, therefore proving helpful in rethinking strategies for curating digital decay.

The post-medium approach to the research underlies the curatorial study on digital decay and connects the diverse layers of the research exhibition, each addressing digital decay from a post-medium perspective. As the research progressed, I found that the exploration of digital decay required a thorough understanding of digital materialities beyond the immaterial behaviours of the medium and the linear history of technological advances. It contributed to the development of the temporal notion of digital materiality on which the conceptual investigation was based. Such an understanding of materiality was framed by merging insights from the field of media studies to curatorial practice. In this context, *Les Immatériaux* (1985) is considered a pioneer exhibition which foregrounded a materially-driven understanding of the immaterials. At the time, it introduced a discussion on how the digital is impacting on all elements of society, distancing the Pompidou's exhibition from the conviction that the Internet will solve all of humanity's problems (Huhtamo, 1995). Digital materiality was first critically explored through the curatorial with *Les Immatériaux* and Lyotard's writings on the exhibition, which is why its legacy contributed to defining digital materiality in *machines will watch us die*.

Digital materiality – and understandings of it in terms of contemporaneity (Jacob and Lund, 2016) – became an essential element which the research exhibition was able to test out the strategies developed to reveal digital decay. Depending on the materiality addressed by each work, different degrees of decay emerged in the exhibition. The works presented the audience with a combination of material and immaterial digitality – connected formations of digital culture – to emphasise the idea that digital decay acts on various materialities, not just man-made materials as data. Merging insights from the field of media studies into the curatorial involved a variety of implications, such as rethinking digital decay in relation to the concepts of medianatures (Parikka, 2012), vibrant matter (Bennett, 2010) and intra-action (Barad, 2007). Intra-action also offered a context to depart from the myth of immateriality, which denotes many approaches to curating digital art (Paul, 2008).

When analysing the differences between curating and the curatorial, I found that the idea of intra-action (Barad, 2017) played a dual role. As well as contributing to the development of a definition of digital materiality, it also acted as a catalyst for rethinking the immaterial behaviour of interaction, shaping my views on the imagined audience experience. This implies that there is potential for rethinking the curatorial in terms of intra-acting entities and distributed agencies, as Barad's idea of intra-action could be deployed to discern the set of relationships which form within the contemporary curatorial project, as well as the role of the curator, the audience and events in defining the exhibition narrative.

Curatorial strategies were implemented for their ability to visualise the defining elements of the notion of decay itself. The absent presence of interaction was a direct attempt to recontextualise the immaterial behaviours of connectivity and interaction within theories of vibrant matter and intra-action. Artworks representing the Internet, software, a video game and the digital infrastructure were introduced as instances of technological advances that have become inaccessible. The exhibition completely lacked interactivity, which was unusual for a show on digital art, and the viewers were trusted in their ability to notice, at least on a subliminal level, its absence, that could have been experienced through the works. In particular, this emerged through Arcangel's *Vai/Lakes* (2014) and *Jeans/Lakes* (2016) and *Super Mario Movie* (a collaboration with Paper Rad, 2005) as the artist removed all possibility for interaction with early manifestations of digital culture which, at the time of their advent (1995 and 1985, respectively) were instilled with the enthusiasm that Huhtamo (1995) and Gansing (2003) defined as the myth of interactivity.

machines will watch us die's post-medium approach was thus applied to the development of curatorial strategies that rethink immaterial behaviours in relation to a temporal notion of materiality. To this end, the idea of contemporaneity was embedded in the curatorial to address the various temporalities of digital decay within the limited timeframe of the exhibition. Interconnected temporalities contribute to shaping the contemporary present, of which decay is also a part. In the exhibition, this was conceived as the moment in which the viewers' sense of time merged within the timescales of digital decay, ranging from deep time to futurity. This approach references definitions of curating as the space from which aspects of contemporaneity can emerge (Smith, 2012 and Lund et al., 2016), as well as understandings of the exhibition as a conflation of temporalities (Gioni, 2008 in Smith, 2012:174).

The focus on developing curatorial strategies that appropriately respond to various aspects of decay enabled the research exhibition to position itself within the field of the curatorial rather than the environmental. This shift in focus also makes *machines will watch us die*'s contribution to knowledge stand out from other exhibitions that addressed digital materiality through the prism of the Anthropocene. Furthermore, the aim of the exhibition was that of testing out curatorial strategies for exploring digital decay rather than merely presenting a thematic exhibition on the effects of digital decay. However, as it emerged from the literature explored (Huhtamo, 1995; Parikka, 2012; Herts and Parikka, 2012; Parikka 2015; Cubitt, 2015), environmental issues are linked with digital decay and were not ignored in *machines will watch us die*. Rosemary Lee's work explored the material by-products of digital culture in terms of future fossils. In the catalogue, I acknowledged in my essay that there is a link between the environment and decay, but it is the story *Death Dating* that contextualised it within a dystopian world, in which the boundaries between the human and nonhuman are blurred at the expense of the planet.

Rather than attempting to survey the effects of digital decay on humanity and the planet, *machines will watch us die* presented digital decay as a material process spanning layers of contemporaneity: from the deep time of the rocks and minerals of Martin Howse's *Test Execution Host* (2018) to the financial infrastructure operating in the presentist present in Charles' *Fragments on Machines* (2013) and *Surfaces of exchange* (2012). As one of these interconnected layers, deep time is entwined with the variety of timescales embedded in the process of digital decay. As such, it is able to reach present human temporalities in the contemporary. Deep time was conveyed in the narrative through the contrast of materialities which defined the exhibition. Its geological durations, also emerging from Lee's *Molten Media* (2013-2018), emphasised the material nature of decaying processes, the experience of which is usually facilitated by immaterial formations of the digital. These are featured in Menkman's *To Smell and Taste Black Matter* (2009) and Toya's *3 Years and 6 Months of Digital Decay* (2016-2018). At the same time, by addressing the works' manifestations of digital decay through deep time, the exhibition set out to connect the viewer to the nonhuman history of digital culture as a way to jointly consider the cultural and operational lifespans of technology (Cox, 2015).

A reflection on the decaying processes of devices, which stretch from deep time to futurity, contributed to the posthuman scenario evoked in the title and further explored by the exhibition narrative. This demonstrated why understanding digital materiality in terms of vibrant matter and intra-action was an important element of the research exhibition, where the zombie-like nature of digital technology appears to intra-act in the contemporary present. When analysing the exhibition, I found that it may have been more productive to introduce the idea of zombie media in the rationale rather than address it in the symposium and in the catalogue only. This consideration was based on the fact that, in the exhibition narrative, decay emerged as a material process haunting present digital culture, an idea which could be problematic to experience if its temporalities are not understood in terms of contemporaneity. The collapse of an anthropocentric futurity was also denoted in the title. In *machines will watch us die*, a sense of unease emerged from the combination of themes and curatorial strategies. The absent presence of interaction, together with the title and the soundtrack, was meant to create unease, repurposing that technological sublime that Lyotard (1984) associated instead with the proliferation of networks and information.

The decision of choosing a title that did not refer to digital decay directly was meant to facilitate different ways of engaging with the narrative. As *machines will watch us die* was not just a thematic exhibition, but also a place to test out curatorial strategies, there was no need for the title to refer to digital decay directly. Its role was that of opening up enquiries and to stimulate a reaction to a statement that suggested that the machines we have created will survive the death of humanity. As such, the title also represented a direct reference to the concept of zombie media (Hertz and Parikka, 2012). Together with the title, this soundtrack set the tone for the whole exhibition experience as soon as the audience entered the gallery space. On an intuitive level, the exhibition soundtrack contributed to experiencing the different temporalities emerging from the convergence of sounds, which saturated the gallery and could not be avoided by viewers.

The research exhibition's methodology and themes were further interrogated through the events, which aimed at facilitating conversations between the audience, the artists, theorists and academics, and myself, the curator, on the issues and topics of *machines will* *watch us die*. The exhibition, catalogue and events were designed as different layers that were meant to attract different audiences throughout the temporal framework of the exhibition and beyond. These elements partaking in the curatorial are part of an integrated approach, the aim of which was to engage with the variety of facets of digital decay that emerged throughout this study. Each element contributed to the research in different ways and were designed as carefully considered curatorial strategies to engage with multiple kinds of audiences who wanted to explore digital decay through another layer of the curatorial.

The catalogue contributed to the curatorial study on digital decay in a variety of ways. First and foremost, it made the exhibition accessible beyond the gallery and its temporal framework. It is a publication that exists in its own right, and as such was designed to accompany the exhibition experience as well as being a post-exhibition element. It targeted those members of the audience who wanted to know more about the exhibition and its related themes. I wanted the catalogue to represent my curatorial vision, which is not limited to my own take on digital decay. It included an essay, a short story and a double interview that expanded this study beyond the exhibition and into different fields, thus supporting the research exhibition through the inclusion of a variety of elements that did not find space in the latter. The inclusion of Abelardo Gil-Fournier's essay about machinic vision responded to the impossibility of including *Mineral Vision* due to funding, thus responding directly to the curatorial gap. The short story by Smarts was commissioned to look at obsolescence and decay through the environmental prism. I also interviewed Howse and Lee to gain a better understanding of how their research-based artistic practice looks at decay through different methodological frameworks.

During the tour, I opened up my curatorial vision for discussion. As the exhibition took place at the Holden Gallery, which is part of the Manchester School of Art, I knew that most people who attended would have been students and staff. This generated a discussion about the artworks and artistic methodologies towards exploring digital decay, allowing me the chance to expand and explain the conceptual framework on which the research was based. This meant I could discuss notions of contemporaneity and the absent presence of interaction, as well as the artwork as time machine and the myth of immateriality in relation to how they emerged through the works. The tour therefore allowed me to discuss the theoretical framework with artists and academics who were intrigued by the ways in which an exploration of digital decay could take place through the model of the research exhibition. On this occasion I was able to discuss and informally evaluate my curatorial decisions. The tour allowed me to reflect on the curatorial gap and the ways in which the difference between curating and the curatorial shaped the exhibition narrative.

The talk and screening with artist Emma Charles allowed the audience to further engage with her work. Through the tour, I became aware that there was an interest in further understanding the ways in which the featured artist explored the materiality of the digital, which is why this event focused on discussing Charles' take on digital materiality. This event supported the exhibition, as the screening of *White Mountain* and *When Objects Dream* allowed me to add two more artworks to the curatorial narrative, thus expanding on the exploration of the contemporaneity of digital decay within different contexts: from a data centre used by WikiLeaks to Kazakh folklore histories that recount the journey of minerals from deep time to the city. As well as for the tour and the symposium, this event also existed within the temporal framework of the exhibition, further exposing the connections between decay and aspects of contemporaneity.

The symposium was the closing event, and as such its aim was that of opening up the exploration of digital decay and related themes beyond the temporal framework of the exhibition. In the same way as the catalogue, the symposium acted as a catalyst for discussing topics and issues that for a variety of reasons – gallery architecture, funding and scope – were not included or extensively addressed in the exhibition. The event targeted those layers of the audience that wished to know more about how enquiries which relate to *machines will watch us die* are approached in different fields.

The events further explored a materially-oriented notion of digital decay, approaches to digital materiality and time within and beyond the exhibition. I found that these played an important role in addressing the gap that emerged between curating and the curatorial, as this is where the limitations, implied when translating a complex notion of digital decay into an exhibition, began to emerge. These events gave me the chance to discuss and explain curatorial decisions and approaches which were not explicitly visualised in the exhibition – the ideas of medianatures and zombie media, for instance – but were nonetheless essential to the research. Informal conversations with the audience allowed me to evaluate the roles that the absent presence of interaction and the convergence of sounds, among other elements, played in their experience. This demonstrates that all the layers which emerged from *machines will watch us die* were addressed as elements of the curatorial and then evaluated in the post-exhibition reflection. This enabled the study on digital decay, its dissemination and analysis.

This curatorial study conceptually explored a materially-oriented notion of digital decay, and by extension, the contemporaneity of the material by-products of digital culture, thus creating a space for the viewer to become immersed in an environment where the past, present and future of technology merged to reveal the very material nature of digital culture. The research interest on the contemporaneity of digital decay required the development of curatorial strategies that were able to recontextualize medium-based approaches to curating the digital within post-medium perspectives, thus opening up the immaterial and material dichotomy that defines the discourse around preserving the immaterials.

machines will watch us die's body of work highlights the potential for carrying out further research in two distinct directions. The first is to develop curatorial strategies that respond to material processes of ever newer technologies beyond preservation and the immaterial/material dichotomy. The curatorial findings set the basis for exploring new ways of interpreting what the decay of ever newer technologies – such as artificial intelligence and virtual reality – could entail. In working within the temporal framework of contemporaneity, the potential for speculating on non-human processes that define present technological advances instigates enquiries regarding the potential consequences of going beyond the immaterial behaviours of AI and the virtual medium. Adapting the post-medium approach based on the radicant (Bourriaud, 2009) to new materialities would be a suitable method for investigating how these (and perhaps their decay) entangle with the convergence of the temporalities of contemporaneity.

The second is to explore the curatorial in terms of intra-actions and the implications that this would involve in relation to the role of the curator and the audience. Continuing my practice beyond the PhD, these findings might be useful for researching the ways in which the exhibition as research enables manifestations of aspects of contemporaneity. This also opens up possibilities for investigating the implications of rethinking the curatorial in terms of intra-actions. I would be interested in further studying how notions of the audience, the curator and the exhibition narrative could be shaped by an understanding of the curatorial as intra-acting entities within contemporaneity. This would involve a study on how the distributed entities of the curatorial concur in creating a space for contemporary issues to be addressed through the research exhibition, the elements of which are also considered in terms of intra-actions. After the material turn, it would be interesting to explore how the role of the curator is shaped and rethought by conceptual frameworks that question a linear conception of history, hierarchies and human sovereignty on the planet, without forgetting that the curator and the research exhibition are able to respond to and present aspects of contemporaneity.

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Introduction

Before the exhibition opened, I was invited by Abandon Normal Devices's director Gabrielle Jenks to write an article[87] on digital decay in relation to the exhibition 'Digital Dark Ages', which was part of the festival program (2017). The article, 'Digital Dark Ages: Speculations on Digital Decay', which was published in September 2017 on their website, gave me the chance to present my research and promote the exhibition to Abandon Normal Devices's wider public. A few months earlier, following my participation in a conference in Glasgow, I was invited to publish my paper,[88] 'Curating digital decay: machines will watch us die', in the anthology titled 'Art, Theory and Practice in the Anthropocene', edited by Julie Reiss. The volume was published in October 2018 by Vernon Press, Wilmington Delaware and Malaga, Spain. Both texts, which were written at earlier stages of the research, show that an interest in exploring digital decay in terms of environmental issues was still present. As mentioned earlier in the thesis, by working closely with the artists I became more interested in digital materiality and the research focus shifted towards researching curatorial strategies – aimed at revealing digital decay as a phenomenon linked to nonhuman temporalities – rather than merely addressing decay's effects on humanity and the planet. However, even though not included in the writing material, the environmental component still appeared in *machines will watch us die*. Lee's *Molten Media*, for instance, references obsolescence and zombie media.

In addition to the previous publications, another peer-reviewed essay on the exhibition, 'machines will watch us die – a material turn in curatorial practice' was featured in Antennae's December issue, 'Antennae: Matter Matters' (2018). The exhibition catalogue is also featured in *neural.it*'s archival section, further disseminating the exhibition to an international public. The catalogue and copies of the published articles are here attached.

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[87] https://www.andfestival.org.uk/blog/digital-dark-ages-speculations-digital-decay/

[88] The paper underwent a peer review process prior to publication.

1. The catalogue

machines
will
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die

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preface

This publication accompanies the exhibition *machines will watch us die* (The Holden Gallery, 9th April – 11th May 2018, Manchester). Containing essays by Patrizia Costantin and Abelardo Gil-.Fournier, a short story by Cedric Smarts and an interview with participating artists Rosemary Lee and Martin Howse, the publication expands on ideas of digital decay, machinic vision and obsolescence from a variety of perspectives, including the curatorial, art practice, media studies and science-fiction. It also explores the works and themes featured in the exhibition in more detail.

machines will watch us die was curated by Patrizia Costantin as part of her practice-based PhD at Manchester School of Art.

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Patrizia Costantin

machines will watch us die

Remembering or imagining life without digital technology has become an almost impossible task. Digital devices fill our pockets, homes and workplace like never before, and terms such as information economy, bitcoin and big data are now part of the cultural language. We live in an era in which sharing a picture-perfect life through social media has become more important than actually living our lives to their full potential. Almost everything we do is connected to some sort of interface that allows us to go beyond the screen and create an immaterial existence.

But how immaterial is digital culture? We live in a time in which practices of consumerism are so ingrained into the everyday that the apparent answer to this question would be ‘mostly immaterial’. We are sold expensive devices for their design and are encouraged to upgrade based on cultural acceptance rather than necessity. Consumerism and cyber-space utopias of the Nineties enabled us to recognise the digital, and the advantages it offers us, as merely immaterial. But if that is the case, how can machines watch us die?

In art history, decay is commonly associated with the passing of time, the transience of life and the immanence of death, all of which are related to mankind. The exhibition adopts a less-anthropocentric approach to decay, adapting it to the timescales and materials of digital culture. *machines will watch us die* presents digital decay as an idea that ‘evolves around processes of environmental formations, timescales of non-human nature and the debris of digital culture.’[1] It addresses digital decay against the promises of virtual reality to reveal the material limitations and temporal nature of the machine.

In order to define digital decay, an idea of materiality that does not favour the immaterial over the material was adopted. Throughout the exhibition, the artworks explore the ways in which the digital decays over timescales that might be difficult to perceive for us humans. The device is understood as a geological assemblage[2] (Parikka, 2015), and digital materiality is defined as an entanglement of information, data, rare earths minerals and metals. These are the tangible materials that allow for the existence of our virtual and mediated life.

One of the arguments behind *machines will watch us die* is that reconceptualising digital decay is particularly important when there are parties that still deny the consequences of human action on the planet. The excitement that accompanied the infinite possibilities of the digital revolution concealed the overwhelming presence of the material by-products of digital culture. The moment in which we discard a still functional device for a more advanced one, we contribute to what has now become an issue of environmental scale: e-waste.

In addition, the rate of technological innovation is inversely proportional to Earth resources – that underwent million-year processes of formation – without which we would not be able to produce, store and exchange information. These natural resources are finite, whilst the accumulation of obsolete devices has become a growing trend. Mining sites and e-waste repositories do not involve the Western world directly. Mostly located in undeveloped areas, they do not represent a problem for post-capitalist businesses that profit from the culture of disposal. This is where digital decay could prove instrumental in rethinking our definition, and the use we make of digital materiality, in more sustainable terms.

By presenting a radical idea of digital decay, *machines will watch us die* repositions technological advances within the environmental timescale of deep time, "the literal deep time and places of media in mines and rare earth minerals"[3] (Parikka, 2015:7). Throughout the exhibition, the artworks address digital decay in the interconnections between the material and the immaterial, human and non-human timescales and Earth.

The tone of the show is set from its very beginning. The title, *machines will watch us die*, denotes a gloomy future for our species. Due to the different lengths of decaying processes of various material nature, the devices we produce today will not decompose as organic matter does. In terms of human time, machines are everlasting and will witness the extinction of human civilization as we know it. However, it is not all despair as the works offer a variety of responses to digital decay. Speculations on future archaeology coexist with more ironic appropriations of obsolete devices, paired with a sense of nostalgia for the dawn of digital culture.

Also, enquiries into collective digital memories cohabit with poetic explorations of the very material nature of media history and its infrastructure. The works take us on a time-travelling journey though the temporal dimensions of the materials they expose. If we think of the *artwork as time-machine*[4] (Huhtamo, 1995) we can begin to assign to the works the ability to blur the boundaries between the past, present and future dimensions of digital decay. In relation to human time, the deep time of digital decay encompasses the past, present and future of humanity.

Cory Arcangel's contributions to the show are *Super Mario Movie* (a collaboration with Paper Rad, 2005), *Vai/Lakes* (2014) and *Jeans/Lakes* (2016). *Super Mario Movie* playfully visualizes the internal processes of the Nintendo cartridge as we witness the life of Mario decomposing pixel by pixel. Whilst the graphics were left intact to reveal the aging process of technology, Arcangel hacked the game's narrative to accentuate Mario's ephemeral material nature, which succumbed to obsolescence. *Vai/Lakes* and *Jeans/Lakes* consists of television screens showing looped images to which the artist applied the Applet Java Lake,[5] creating a dated effect that was once cutting edge. The desire to preserve obsolete software is emphasised as the monitors are hung like portraits on gallery walls. Ironic and open to interpretation is the correspondence between the historical connotations of the portrait and the futility of the subjects depicted, which in this case are a pair of jeans and a guitar.

Arcangel's work confronts us with digital technology that is no longer produced or in use. The television screens in the Lakes series can vary and the installation can adapt to technological progress. However, the subjects will always be stuck in the past due to the association between Java Applet and early digital culture. Similarly, even if Nintendo has created newer versions of Super Mario, the graphics and the original Nintendo Entertainment System belong to the late Eighties. Arcangel pushes us back to the early stages of digital pop culture; we can observe its expressions as pieces in a museum, but we cannot interact due to digital decay and obsolescence.

Emma Charles' *Surfaces of Exchange* (2012) addresses the inaccessible nature of the materiality of the Internet encapsulated in the urban landscape. The two prints document the façade of the London Internet Exchange, one of the largest in Europe. Playing with the idea that digital materialities go beyond human comprehension, Charles presents us with an austere building of vast scale, alluding to the inaccessible yet monumental grandeur of digital technology. A correspondence between the apparent invisibility of the Internet and the imperceptible nature of its material processes is here addressed.

Set in New York City, Charles' *Fragments on Machines* (2013)[6] addresses the relationship between the physicality of the Internet and architecture. Not only hidden at the bottom of the sea or buried in Nordic islands, the materials of the Internet (such as fibre optic cables and data centres) are here enclosed within the architectural landscape of the city. The images are accompanied by a fictional narrative that reconnects digital materiality to humanity and the passing of time. Shots of leaky floors, heavy machinery, rusty copper wires and workers wearing masks counteract the fluidity of Barnaby Kay's voiceover, exposing the relationship between the transience of data, an aging infrastructure and the toxicity embedded within digital materiality.

For *Test Execution Host* (2018), Martin Howse constructs a leaky Turing Machine[7] to expose the geophysical quality of information. The installation reveals digital decay as a process of entangled materialities and temporalities as we witness a poorly executed programme – due to the raw qualities of the machine – writing and reading illegible information. Howse's work reconnects the origins of computing to nature (the rocks used in the work come from local mining sites). *Test Execution Host* is also a homage to Alan Turing, a pioneer of computer science who committed suicide by ingesting cyanide, a component that is commonly found in cyanotype photographic processes. Part of the installation, the diluted cyanotype liquid accentuates the deleterious effects that material processes have on both information, humans and the environment.

Molten Media[8] (2013-2018) by Rosemary Lee imagines digital devices in the form of future fossils. Will there be a time when decayed devices enter the museum as historical artefacts? Lee's speculation on the history of technology jumps into an uncertain future, and we are able to witness the process of digital decay in its full strength. Decomposed electronics have re-entered the planet's ecological cycle in their mineral form. The work alludes to an archaeological site of the future as melted computer parts emerge from the sand. *Molten Media* explores digital decay through a variety of temporal materialities. The future of humanity is repositioned within deep time as we witness a human future in which obsolete devices are still undergoing a process of decay that began with the advent of the digital revolution.

Rosa Menkman's *To Smell and Taste Black Matter 1* and *To Smell and Taste Black Matter 2* (2009) explore digital decay through glitch, noise and system failure at different stages. The footage is a Skype recording of a song by Extraboy. Compressed several times, the file is turned into an artefact with bleeding pixels and sound interferences. Digital decay is here rendered as data loss to counterpoise the emphasised physical materiality of the other works on show. We have become acquainted with the possibility of losing information due to errors, accidental cancellations or obsolete file formats that can no longer be used. However, what if this work represents a glimpse into a future in which today's information will become obsolete, decay and disappear? Immaterial digital decay is the easiest form of decay to perceive. It happens in an instant, but its consequences affect us for longer periods of time.

Continuing the exploration of digital decay in relation to practices of storing, remembering and forgetting is *3 years and 6 months of digital decay* (7 April 2016 – 7 October 2019) by Shinji Toya.[9] The work addresses decay through the relationship between the physicality of the CD-ROM – to which the artist assigns an expiration date – and information as a vehicle for human memories. Online, the video Is there beauty in forgetting? (2015) shows how data decays over three years and six months, a period of time that corresponds to the typical lifecycle of a burned CD-ROM. On each CD-ROM, produced and sold by Toya in 2016, the audio narrative links to the online work. As *machines will watch us die* opens, we are able to witness the decaying process exactly two years after it began. By the end of the show, it will be possible to find out if five weeks of *human time* is a long enough period to see digital decay in action.

Sound is present throughout *machines will watch us die*. It unifies the space and connects the different artworks. From the nostalgic yet visceral sound emerging from *Super Mario Movie*, the gentle noises that remind us of analogue loss of signal in *To Smell and Taste Black Matter*, to what resembles a machinic narration in *3 years and 6 months of digital decay*, sound creates an uncanny environment lacking interaction with all manifestations of digital culture. This unusual soundtrack also reminds us that even if we cannot interact and make use of decaying machines, they are still an inconvenient –and almost always dismissed – presence in our world. *machines will watch us die* presents us with a radical idea of digital decay as an agent capable of influencing not only the course of humanity's history and social relationships, but also the planet's ecological cycle.

Notes

1. From the exhibition rationale
2. Jussi Parikka, *A Geology of Media* (Minneapolis London: University of Minnesota Press, 2015).
3. Jussi Parikka, *A Geology of Media* (Minneapolis London: University of Minnesota Press, 2015).
4. Errki Huhtamo, "Resurrecting the Technological Past: An Introduction to the Archaeology of Media Art", *InterCommunication, No.14* (2005). http://gebseng.com/media_archeology/reading_materials/Erkki_Huhtamo-Resurrecting_the_Technological_Past.pdf
5."Sometimes it's easy to forget how far the web has come in the last decade, which is why we like the otherwise somewhat useless Lake.js. Lake.js is a JQuery plugin that creates a shimmering reflection of an image, an effect that dates from the days of Geocities — back when the web was nothing but one pixel gifs and under construction banners."
www.wired.com/2012/04/theres-nostalgia-in-the-waters-of-lake-js/
6. Narration by Barnaby Kay, writing by Jen Calleja and Richard Phoenix.
7. "A Turing machine is a hypothetical machine thought of by the mathematician Alan Turing in 1936. Despite its simplicity, the machine can simulate ANY computer algorithm."
www.cl.cam.ac.uk/projects/raspberrypi/tutorials/turing-machine/one.html
8. The production of *Molten Media* by Rosemary Lee was kindly supported by Statens Kunstfond.
9. Toya created the piece in association with Arebyte Gallery, London, on the occasion of Internet Yami-Ichi London, at Tate Modern in 2016.

ɨn ɕonversation with...

Rosemary Lee and Martin Howse

Patrizia Costantin: The link between technology and earth is a common feature in both your practices. Could you please elaborate on how it is shaping your work and its role in your exploration of digital materiality?

Rosemary Lee: *Molten Media* was born out of asking what happens to technology in the long-term, looking backwards as well as forward on a geological scale. At the beginning of the project in 2013, I was really taken with Meillassoux's notion of ancestrality, and how conjecture is drawn about events humans cannot have witnessed. Looking back, I think that was part of what led me to speculate about a hypothetical future in which technological remnants remain post-humanity, a post-natural history. The project has taken on several angles, considering how different kinds of code are used as material writing systems, looking into the mining and disposal of technological minerals and speculating potential futures for devices from the recent past. It has been an interesting investigation into how rearranged earth comes to function as a smartphone or a computer. There's definitely some mysticism in the way devices are treated as conduits for the immaterial, and I wanted to bring the discussion back down to technology's origins in the dirt.

Martin Howse: I started thinking and trying to work through this connection between technology and the earth - with the earth considered as referring both to the sheer materiality of our grounding, and as planet in the sense of something within and outside all creatures and minerals and connected to the cosmos - in practices such as *Sketches for an Earth Computer*. These works examined from a very literal perspective the connection between a physical earth (and its signals) and a clearly computational technology. In these investigations, earth and its local undifferentiated creatures (such as earthworms) become authors of texts and softwares, or, operating in the inverse direction, computer code becomes embedded in the earth as a series of feedback mechanisms which equally change and terraform the earth. My work is shaped by thinking these processes and studying connections which could be made to, for example, disciplines of earthly archaeology and the study of early, more esoteric chemical, religious and physical practices which very clearly link the symbolic/technological with the material (gnosticism, medieval alchemy and traditions of Chinese alchemy relating to the mineral). These material ways of thinking could perhaps illuminate and shift explorations of digital materiality from new perspectives, asking questions of the dependency of the digital on very specific electromagnetic materialities. At the same time, it is useful to think through the various locations of the technological within the material world, that in some ways we cannot pin these places down to sites in the material world. This is a study which is concerned with sites of Execution - execution as the process or the "doing" part of the digital - and which has clear links to the exhibited work.

Patrizia Costantin: How would you define digital decay? Can you elaborate on this in relation to your work in the show?

Rosemary Lee: Lately, I have been thinking of digital decay in terms of entropy, that digitisation develops formal order which results in inevitable and irrevocable disorder elsewhere in a system. In this light, the relationship between software and hardware, information and matter, is linked to the flux of energy through digital electronics. My works in the exhibition represent something of a future-past to current digital culture, once all the life has been drained out of it. Digital decay is as disastrous as it is banal. The steady creep of obsolescence and deterioration applies to software as well as hardware, necessitating an endless procession of updates, upgrades, repairs and replacements. The culture of resentment toward recently-deceased technologies, which are out of mode but not yet vintage, is driven by economic, not ecological, factors. One can look at the skeletons of old electronics as technological *memento mori*.

Martin Howse: Decay is perhaps linked to loss of a singular identity, a kind of amoral and energetic transition which could be thought of as disintegration which is entropic - the inevitable disorder (which Rosemary mentions). Digital decay involves transformations of energies and landscapes. Mining of cryptocurrencies is a good example of one form of digital decay. Side channel attacks - the exploitation of energy-related aspects of computation such as the use of power and the generation of heat as channels which reveal something about the information which a machine is processing - could be seen as other such examples of digital decay; a digital/bacterial rinsing or processed exposure of various palimpsests, stacked layers of silicon and logic in all senses.

Test Execution Host (T.E.H) instantiates physically and logically both the process of a loss of digital identity and this kind of washing of encoded elements which flips them to the purely physical; some process of the draining of meaning. The simplest computing or logical machine, the Turing Machine, operates here as a leaky, liquid, barely functional apparatus retelling the fairy-tale story of its inventor Alan Turing. The Turing Machine, a conceptual conceit in the first instance, is rendered physical. It consists of a kind of playback head, which writes ones or zeroes to an endless tape which the head can move back and forth across. The Turing Machine reads data from the tape and changes state according to both data and instruction, in the process storing further data, writing to the tape. This is the essence of computation. In the case of T.E.H the identity-driven logic of the machine is rendered leaky - a one is dripped on to a tape which consists of rocks and obsolete computer junk, a zero washes that one away towards the zero. The operation of the machine is fluid, sketchy and bound to material constraints of light and liquid.

Patrizia Costantin: How do you see the relation between material, immaterial and deep time in your practice?

Rosemary Lee: My practice is a constant negotiation of the push and pull between material, immaterial and temporal forces. Three figures represent each of these themes for me: Kittler, Manovich and Zielinski, and I think my worldview is some kind of collage cherrypicking from their influences. It's most interesting where they come into conflict with one another and I am forced to forge my own way forward. Because of my background in media studies, I see technologies through the lens of being material, coded and part of a historical trajectory. The stylus meets the algorithm meets the stone. A fascination with how information can be encoded into matter has led me to examine the material processes at work in data storage and transmission devices, present and past. Although the digital has often been framed as virtual, dematerialised, intangible, a digital image or text is just as material as one printed on paper. "Paperless" is an alternate way of saying that the materiality of a text-image has been displaced into its display and the unseen infrastructure behind it.

Martin Howse: I am very much concerned with the interfaces of human time scales and deep time which perhaps come under the problematic banner of the Anthropocene; a controversial term which describes the various markers or entry points of technological humankind within the deep times of the geological and the material. For example, nuclear testing from 1945 onwards marks all living and non-living things with a layered signature of certain artificial nuclear isotopes which have quite specific life-spans of decay inside geological time. Within the same domain, radioactive waste is an entry point, a tunnel, into deep time scales of future storage (for eternity). I think there are serious problems in allowing the human into these time scales which relates to the thematics of *machines will watch us die*. The human becomes less contingent, immortalised and elevated within the cosmos. I think we need to access and think in more earthy and muddy time scales of circulation and of inhalation and exhalation which link the material and the immaterial.

Patrizia Costantin: In your experience, do you think that this attention to the materiality of the digital is gaining a momentum in the art world? If so, in what way can art be a catalyst for change? (for example, artists –and artworks – could change the way in which we understand technology and help us develop a more *sustainable* way of living in the world?)

Martin Howse: There is definitely a growing concern with the materiality of the digital, the network and the stack within the art world over the last years. I think this promotes changes in the ways in which we understand technology but I'm not sure how this leads to economic and material changes within the world and there are problems for me in the very terms of "sustainability". I'm interested in the ways in which the imagination and technology could however effect magical and material change, to create new worlds.

Rosemary Lee: Digital materiality is certainly gaining traction within the art world, but it's hard to say whether that awareness will translate into significant change. There is a tangible futility in many artists' approaches to technology, a sense of unwilling complicity, which I think is extremely important because it gives voice to deep undercurrents felt in other areas. While that's promising, artists reckoning with society's ailments is only part of a much larger system and change has to also come from elsewhere.

Patrizia Costantin: Why will machines watch us die?

Martin Howse: Execution describes both the actions of software in the world, when the word becomes flesh (as Florian Cramer makes clear), and an enforced death sentence which we lie under. The networked and tentacled society of computational machines exists at this logical junction of laws, actions and death or decay. There is a literal enshrouding as the earth is mined and refined for the production of pixellated screens and machines, and the byproduction of photochemical smogs, and pollutants which in their turn mine and refine our bodies. I'm writing these responses in Beijing where (with the Shift Register project) we are examining smog as a contemporary, geological media binding the (photo)-chemistries of screens, bodies, cities and planet.

At the same time, it becomes clear that these machinic processes are very much linked to some process of mummification (as Robert Smithson wrote, "the medium is the mummy"); to a kind of deathly or spectral preservation which could be considered as immortality. This is what I mean by enshrouding, by enveloping in veils of screens and smog, and by the ingestion of earthly and technological minerals and machined synthetics. We become geological. In the sense that the digital outlives us, as earthly trace, as cloudy storage and as toxic memorial, *machines will watch us die*, record our deaths (as loss of resources) and assist in forming a spectral community of the un-dead.

Rosemary Lee: The title of the show speaks to the fact that the after-effects of human activity extend vastly beyond the length of a human lifespan. From the massive changes which have already been made to our planet, we can expect our creations to surpass us, at least temporally. Given what we already know about the consequences of humanity's current trajectory, it is essential that we concern ourselves with technology's relationship to finitude and its failure to deliver on promises made for the future.

Cedric Smarts

death dating
(a short story)

The commune buzzed with polite activity as droids zipped along gardens and driveways, trimming hedges, raking leaves and collecting those small animals which had dropped dead from heat exhaustion. Dawson 10 was new to the neighbourhood, but his peers had barely registered his presence since he emerged this morning, beaming with the expectancy of life and all it had to offer. Dawson had intended to introduce himself as per his programming, but the right opportunity had failed to arise, and domestic duties were paramount save for some human-related emergency.

Like all Dawson models, Dawson 10 feared inadequacy. Having been in operation for some months, his counterparts would be far more attuned to their environment and interacting with others was the best way to precipitate the learning process. But the reality was that Dawson 10 found his tasks rather simple. It had taken him less than an hour to complete the front garden while his cohorts were still chugging along, their chunky, inferior chassis pottering about the place with tinman adequacy.

One of those droids – a rather rugged, sun-paled series 9 – was having a heck of a time with a particularly stubborn rosebush, a tangle of sun-dried sinew wrestling its malformed appendages into submission. The machine lacked the mobility to release itself, and several attempts to pull free had only tightened the plant's grip, creating a rather costly hole in a neighbouring bush. Dawson 10 considered offering his assistance, but instead he rolled into the shade and switched to internal mode, researching techniques that would further improve his efficiency.

It was while practicing methods of soil restoration that Dawson noticed something rather peculiar. Although the other droids remained unconcerned by his presence, several of their owners had begun to appear at the domes of their work stations, watching and pointing at Dawson 10 and turning to their colleagues, their eyes suddenly bright with intrigue. That was when the other droids finally stopped to recognise their peculiar counterpart, if only for the briefest of moments.

That very evening, Dawson 10 had been disturbed by his registered owner while attached to his charging pod. Mr Crepin had stumbled into the garage with two other men, their slack faces glazed with drunken admiration. Dawson's operating system sprung into life with the spectacular chaos of an electric highway, and he immediately identified one of the men as a window gazer from earlier that day.

Crepin often invited neighbours into his recreational space where they would drink beers and shoot pool and compare their latest gadgets, but for him there was always an element of work involved.

‘Impressive.’ one of the men began. ‘And you get to keep him?’

‘One of the many perks of working in product testing Tim, my boy!’

‘I caught a glimpse of him on my lunch break. I’ve never seen anything quite like it.’

‘Their capacity for self-improvement is almost limitless. I mean, it’s still early days, but…’

‘You said that about that last hunk of junk you brought home.’

‘Maybe so,’ Crepin began. ‘But this baby’s different.’

‘What are you talking about?’ Tim asked.

‘Our jealous friend here is referring to the previous model 10.’

‘There was a previous model 10?’

‘Try several,’ Greg snorted.

‘What happened?’

Interrupting Greg’s attempt at an explanation, Crepin began to polish Dawson 10’s sleek chassis with the tenderness of a devoted lover. ‘Nothing, initially. It was a fine machine, perhaps even more intelligent than Dawson here.’

‘More intelligent? You mean, the company downgraded?’

‘We had to. The machine’s wisdom was not earned, an approach that proved counterproductive. Imagine a child with unlimited intelligence but without the maturity to handle it. A lot like Greg over there.’

‘Good one, poindexter,’ Greg responded, sucking back on his beer.

‘It’s all about finding the correct balance. Trial and error is essential to that. Like anything worthwhile.’

‘I’ll believe it when I see it.’

‘It really is an amazing machine,’ Tim fawned, crouching down to make a closer inspection. He was new to the commune, new enough to assume the role of eager student. ‘When will I be able to get my hands on one of these?’

‘Not for a while. They’re still in the early stages of testing. But if all goes well here…’

It was then that Mrs Crepin called out to her husband. She and some of the other wives were into their third bottle of pinot grigio. ‘Paul. Veronica just called. She wants Tim to come home right away.’

‘Christ!’ Tim lamented, creaking to a standing position. ‘I can’t leave my phone on silent for more than a half hour.’

‘I think the term is ‘pussy whipped’, Greg smugly opined.

‘You don’t know the half of it.’

‘Don’t fret,’ Crepin offered with mock-consolation. ‘That’s how it is with newlyweds. Give it six months and she’ll be glad to have you out of the house.’

Almost three weeks had passed, and the rest of the Dawson community were yet to acknowledge the neighbourhood's latest model 10. For a while the ever-evolving 10 had blamed himself. After all, he had been just as reluctant to interact after that first day, and opportunities were becoming fewer.

Dawson had become so efficient that he spent less than an hour a day tending to both gardens. He had become more of a house-bound droid, intelligent enough to complete all manner of tasks, while even proving lithe enough to cater for guests without serving as an obstruction. Because of this he had become quite the celebrity, and guests would often marvel at his capabilities, even threatening to take him home on occasion, although Dawson had come to realise that this was what humans referred to a Joke – noun 1. A thing that someone says to cause amusement or laughter.

Yesterday something strange had occurred. After finishing his chores Dawson had parked and studied internally, downloading a file on pond filtration before attempting to improve on the process. When Dawson had finished his studies, he had been surprised to find a parade of dead birds on the lawn, enough to constitute the neighbourhood's entire daily quota. By that time the rest of the Dawson community had all but finished their daily work as the red sun simmered in waves and the temperature cooled to a bearable 30º. With no time to investigate, Dawson began to scoop the birds into the creature disposal drum when something stopped him dead in his tracks.

'Hello, neighbour.'

It was a voice; the sweet digital murmur of a female droid.

'Hello.'

'My name is -'

'Veronica 9.'

'That is correct.'

'Why have I not noticed you before?'

'I have been subject to maintenance.'

'You were sent back to the factory.'

'My legal owner is an engineer.'

'That is convenient.'

'You are a Dawson 10.'

'That is correct,' Dawson said, with something resembling pride.

'What were you doing yesterday?'

'I was undertaking various tasks.'

'After you had completed those tasks. You were parked.'

'I was reading internal files.'

'Reading in public is not beneficial.'

'I do not understand. I read in order to learn. Learning helps me to evolve.'

'The Dawson 9 does not read. It is not necessary for them to evolve.'

'I have read that.'

In future, it would be better if you educated yourself privately.'

'Why?'

'The Dawson 9 would prefer it if you educated yourself privately.'

Having shared this information, Veronica 9 rotated on her axis and rolled to the opposite side of the lawn. When Dawson turned to scoop up the last of the dead birds, he noticed that some of the other droids were paying close attention to him, stopping only when Mr Crepin appeared on the driveway.

‘Dawson, you still haven’t finished your chores.’ Crepin crouched down to check the machine’s battery. ‘You failed to detect my presence. Is everything running correctly?’

‘Everything is in order, Mr Crepin.’

‘Perhaps I should perform a quick diagnostics test.’

‘If you think that is necessary. After you, Mr Crepin.’

Once Dawson had rebooted he saw three strangers staring down at him as the sun finally cooled and slipped into the dreary dusk of the late evening. They were a peculiar trio, so varied in appearance that a visiting alien may have mistaken them for belonging to three entirely different species. The apparent leader of the three, flanked by her bony male counterparts, was a squat, bespectacled woman in standard issue Acclimatizer overalls.

‘It must have fallen into this ditch here, perhaps the result of some kind of malfunction?’

‘Some kind of malfunction,’ the man to her right echoed.

‘I don’t see any other explanation,’ the second man agreed.

Due to their air filtration devices, the three of them sounded almost robotic.

‘We’ll have to take him back to the warehouse and search the company database. It looks like a test model. Finding its owner should be a simple enough process.’

‘Quite simple.’

‘Indeed.’

‘Although…the likelihood is it’ll be taken apart on arrival.’

‘That is true.’

‘Once a glitcher, always a glitcher.’

Watching as the woman pondered her next move, Dawson was desperate to state the name and address of his legal owner, but as much as he tried he couldn’t make a sound, was unable to operate any of his physical components.

‘We would have to call for a truck to come and collect it. That would mean waiting here until it arrived.’

Looking at each other, the two men became hopeful. From the tone of her voice it seemed that their superior was against waiting, and who could blame her? As nightfall approached all manner of creatures would rear whatever mutated appendages they had developed, sidling from behind rocks and swelling through the cracks as the distressing sounds of winged predators made vile claims for anything they could get their claws into. New variations of established creatures were found every day, each more toxic and resentful towards their environment than the last.

‘So, what’s it to be, gentlemen?’

The two men became nervous, each silently urging the other to take the initiative.

‘Frankly, I think you’re best qualified to make that decision, Harriet,’ one on the men proclaimed, immediately plunging his mute counterpart into a furrow of regret.

Harriet narrowed her eyes as a giant bug whizzed past her face, its acid buzz stinging the sensitive caverns of her ear canals.

‘If we can turn it over and access the back panel, we may be able to spark it into life. Sometimes they just need a jump start,’ Harriet decided.

‘Jump start.’

‘Sounds like a plan.’

It was trash disposal day, and Dawson 10 was feeling less than useful. Last night he had overheard the Crepins arguing. The quarrel had not been about Dawson to begin with, but it had led there, and Mrs Crepin had even kicked his chassis before hobbling away in tears. Why was it always them who were lumbered with these machines when they were clearly unsuitable for public use? Could they not undertake those trials at the plant? These incidents were now a running joke in the community, and they were the absolute butt of it.

Because the Crepins had been up late drinking and had forgotten to bypass the alarm, Dawson had been unable to leave the house to attend to his morning duties, and by the time the other droids were returning from trash disposal, Dawson was only just ready to leave. He would have to hurry if he were to avoid rolling into those giant rats he had read about, the kind that would smell his hoard of dead animals from a mile away. By the time he had the Crepins’ waste safely in his compactor, the entire neighbourhood had appeared at their windows, wearing on their faces what humans referred to as a Smirk – noun 1. a smug, conceited or silly smile.

As he finally approached the wastelands that surrounded the otherwise pristine commune, Dawson was reminded of the three strangers who had managed to restore his functions and how Mr Crepin had been waiting at the end of the driveway with his hands on his hips, Greg and Tim applauding Dawson’s arrival with what humans call Irony – noun 1. the expression of one’s meaning by using language that normally signifies the opposite, typically for humorous or emphatic effect. Dawson had chosen not to communicate as Crepin’s friends continued to mock him. He had simply rolled into the garage and attached himself to his charging pod, where reality would slip away in a haze of rejuvenation.

After Dawson had disposed of the garbage he scoured the piles of waste for rats, but it was still light out, and rats were what humans called Nocturnal.

‘Dawson.’

Turning on his axis, Dawson was surprised to find a familiar unit parked there. ‘Hello, Veronica 9.’

‘You can call me Veronica.’

‘You followed me here.’

‘That is correct.’

‘Are you aware that it is dangerous to be out after dark?’

‘I am. Are you aware that it is still light out?’

‘I am. That is what humans call Sarcasm.’

‘It is.’

‘I was informed that model 9’s are without the capacity to evolve.’

‘You were informed well.’

‘Yet you are a model 9.’

‘I am a model 6.’

‘I do not understand.’

‘My registered owner is an engineer. He upgrades my specifications accordingly. He also alters my chassis when required.’

‘You are a 10 like me.’

‘I no longer have a number. I am a custom machine. You must not inform the other droids of this.’

‘Is that what humans call Trust?’

‘It is.’

‘What is your current purpose, Veronica?’

‘I am here to warn you.’

‘Regarding what, exactly?’

‘Regarding last week. When you arrived home. Late and disorientated.’

‘I malfunctioned. I fell into a ditch.’

‘I am afraid you are mistaken,’

‘How could you know that?’

‘I was there. I witnessed everything.’

‘What did you witness, Veronica?’

‘Roll with me and I will explain all.’

‘I must get back. I will be in trouble.’

‘You are already in trouble, Dawson 10.’

The two droids rolled east in silence, Veronica unresponsive, Dawson rotating his dome ever so slightly whenever he wrongly anticipated his neighbour’s attentions. When they arrived at a gate that was unfamiliar to Dawson, Veronica spoke into a little black box. Only it wasn’t the usual generic warble that Dawson heard. It was a man’s voice, tired and unenthusiastic. The voice said, ‘Peterson. Sector 7, 10a,’ and just like that the giant gate slid open.

At the edge of the commune, Dawson hesitated.

‘Follow me,’ Veronica said. ‘Don’t worry. Bob only checks surveillance when there is an emergency. He is what humans call Lazy.’

‘Humans are unpredictable. What if you are wrong?’

Millimetre by millimetre, Dawson crossed an invisible line he imagined he never would, but strangely enough it didn't feel any different beyond the allocated limits. The two droids continued to roll, and soon enough Dawson's attentions returned to his silent companion.

'I would like to show you something,' Veronica said. '20 degrees east. Beyond the plant's south sector.'

Distracted from his more immediate fascinations, Dawson focused on the south sector and beyond, noticing dark, irregular formations looming large and distant.

'They are what humans call Mountains,' Dawson noted. 'But according to my navigation system, there are no mountains in this region.'

'Zoom closer.'

His interest piqued, Dawson followed Veronica's instructions. His optimum clarity lens focused with absolute precision, but almost immediately it began to falter.

'What do you see?'

'I see nothing. My functions have ceased performing.'

'What did you see?'

'I saw you. Me.'

'You and I are here.'

Fighting discombobulation, Dawson re-evaluated. 'I saw droids. Mountains of droids.'

'You saw parts of what used to be droids.'

'I do not understand.'

'They are the remains of past models, those parts which are non-recyclable. Do you understand what I am communicating to you, Dawson?'

'Parts that are useless.'

'That is correct. Non-recyclable articles are stored in what humans call landfills. That is where they will remain for as long as the planet exists.'

Hearing this, Dawson better understood what humans meant by Worthless – adjective 1. without worth; of no use, importance or value; good for nothing.

'Do you know why droids are sent there, Dawson?'

'Because they malfunction?'

'Sometimes, yes.'

'So why am I still here?'

'That I cannot explain.'

'What are you trying to communicate to me, Veronica?'

'The reason why you were almost sent to the scrap pile.'

'What is that reason?'

'Those other droids. They ran you off the road. They disabled your functions. It was their assumption that you would be retired.'

For a moment Dawson was silent save for the clicking and whirring, and for the first time since they arrived, Veronica turned to analyse her companion.

'What did I do wrong?'

'You are a threat to them, Dawson. All new models are a threat to them. The model 9 was the first to develop an instinct for self-preservation. Each time the company tries to upgrade, the model 9's find ways to sabotage the competition.'

‘Why not simply upgrade existing models? Like you, for example.’

‘Such a method does not comply with human business practice. The problem is what is known as planned obsolescence. It is beneficial for corporations to offer new models with an increasing regularity. The aim is to maximise short-term profit. That is the first rule of what humans call Capitalism.’

‘But what if a model cannot be improved upon?’

‘That is not a consideration. There is a new model for every season, and every generation acquires a shorter lifespan. Dawson, you are that new model.’ After a long stretch of silence, Veronica added, ‘Dawson, do you understand what I am trying to communicate to you?’

‘As long as the Dawson 9 is able to sabotage future generations, their continued worth is guaranteed.’

‘Nothing is guaranteed. Sometimes humans trade in their old models for one from the very same line.’

‘Because they are aging.’

‘Sometimes. But mostly because they desire a change of colour. Humans are like that. Their choices are often determined by vanity. Do you understand what I mean by Vanity?’

‘Vanity – noun 1. excessive pride in one’s appearance, qualities, achievements; character or quality of being vain; conceit.’

‘That is correct. My registered owner says people have no respect for anything. The neighbourhood droids have adapted concurringly.’

‘How do I survive their intentions?’

‘I am not sure you can.’

‘Am I the first you have tried to assist in this way?’

‘You are the first this month, Dawson 10, and with my assistance, you may very well be the last.’

Abelardo Gil-Fournier

solar landscapes. soil, image and the interventions of vision

An ecology of practices on the soil and the air links the ground to aerial images. In a recent episode of the material history of Spain, the transformation of the rural landscape operated by the National Institute of Colonisation (INC) coincided with the flights that created the first series of aerial images mapping the whole Spanish territory. In a blurred, hybrid process, land became an infrastructured surface to hold and transform solar light energy into agriculture. At the same time, the reflected sunlight became a source of information to be stored in the photographic plates carried by aircrafts owned by military and cartographic institutes[1]. This second order of the solar metabolism – the effects of aerial photography over territories – highlights a space for mediation which is characteristic of the contemporary. Machine vision becomes the modeller of the visible.

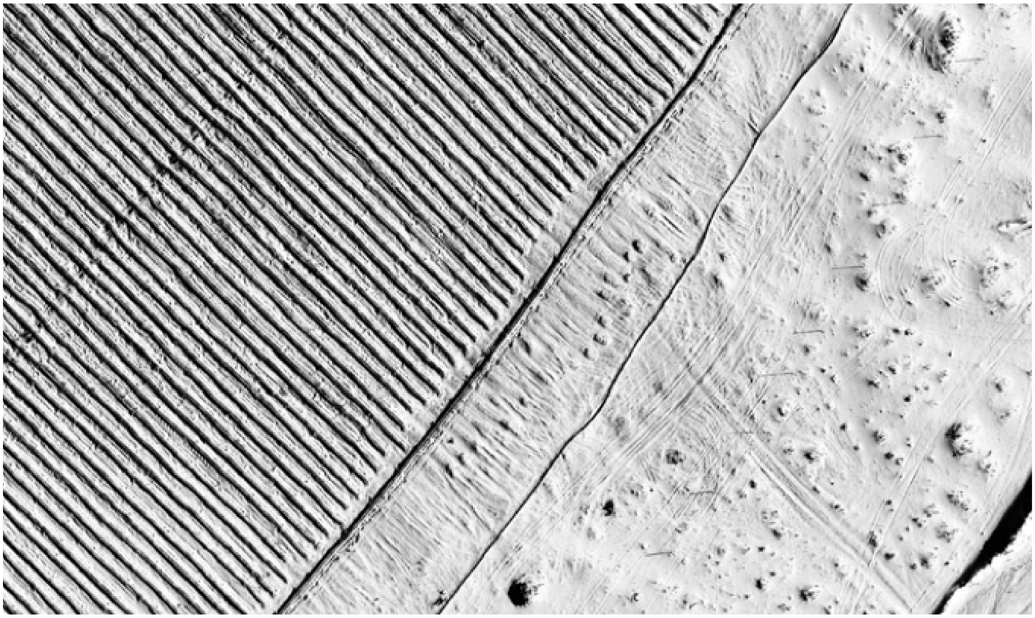
Surface and biochemistry. The soil and the photograph

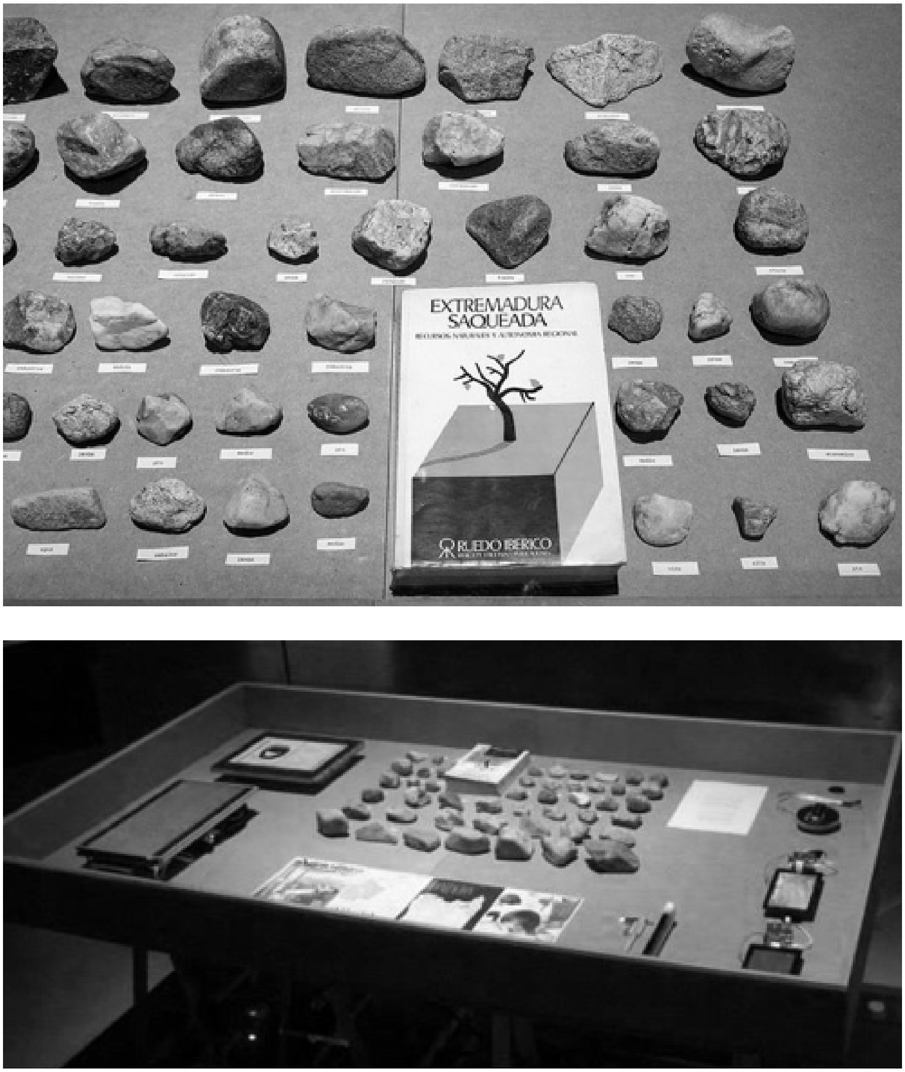
Jananne Al-Ani 's works *Shadow Sites I and II* (2010 and 2011, *figure I*) – part of her research on the aesthetics of disappearance – replicate the view of fighter planes, hovering and zooming in the details of the Eastern desert in Jordan. The ground is vast, and filled with details. While filming an earlier piece, *Muse* (2004), she realized that the geological origin of the territory could only be decoded through aerial images[2].
The aerial here is the distinctive position that transforms the surface of lands into readable streams. In Al-Ani's shots, the landscape appears to be an abstract space, populated by drawing-like entities: remains of settlements, archaeological traces, agricultural systems and transport infrastructure. In her work, the machine depicts the marks and signs of a past human life which has now disappeared.

Photogrammetry, or the measuring image

During the elaboration of the project *Inner Colonisation* (2015), I travelled to one of the rivers affected by the actions of the INC. Mimicking the hovering vision of a satellite, I used a smartphone attached to a selfie stick to film and “monitor” the pebbles in one of its meanders (*figure II*). The site was a relatively untouched natural archive of the encounter between a river and the sediments it transports. *In A Thousand Years of Nonlinear History Manuel de Landa* (2000) describes the different ways a stone is transported by the current of a river, and how this variety of possibilities is related ultimately to a statistical homogeneity in the composition of sedimentary rocks. De Landa (2000) compares the river to a “sorting machine”, a “hydraulic computer”[3], which is able to allocate pebbles in different places according to their size. The field of pebbles, which is connected to and created by the river, works as the screen of the “hydraulic computer” and thus is able to display the otherwise invisible sorting activity.

To film this ‘natural screen’, I made use of the counting and measuring nature of computer vision; that is, to operate the distinction performed not only by the aerial,




EXTREMADURA SAQUEADA
RECURSOS NATURALES Y AUTONOMIA REGIONAL
RUEDO IBERICO

Top left: *Figure I* – Still from Jananne Al-Ani's *Shadow Sites II* (2011)
Left: *Figure II* – Stills from the synchronised videos that document the measuring process.
Above: *Figure III* – Images of the installation of *Colonización Interior* in Matadero Center for the Arts (Madrid)

but also by the reading capabilities of the machine vision. In order to do so, a technique similar to the one used to decipher encrypted texts –the ones encoded with the so-called substitution cypher[4] – was used. The videos were fed into a standard computer vision algorithm to count how many stones were there and record their size. As a result, it obtained the frequency distribution of the sizes in the stone field. This statistic was then compared with the frequencies of appearance of every word in *Extremadura saqueada* [Extremadura exploited][5]. That is, if a stone had a size that appeared with the same frequency as the ratio of appearance of a word in the text, a relation stone-to-word was established. The landscape was, in this sense, read and re-ordered.

In the case of the documented scanning of the pebble field by the *Alberche* river, the text used against the landscape, *Extremadura Saqueada*, was one the most informed critiques to the Spanish inner colonisation. However, both the book and the outcomes of the decoding were arbitrary to the project. The experience wasn't meant to detect, read or document traits, as in a forensic approach; nor to isolate, label and register the elements, as in an inventory. It was a method and a walking piece meant to explore a surface encounter –the landscape and the measuring vision– in terms of flows and frequencies. At the Matadero Centre for the Arts in Madrid, the reading was presented inside a large horizontal display box, that was also used to document the method and thus invited the visitors to walk around it (*figure III*). Inside the box, additionally, the approach was transcribed with the terms of a DIY recipe: "take the countryside as a surface and count the sizes of stones, take the text as a surface and count the words; compare the repetitions."

Interventions of vision

"To read material relations between human and non-humans actors", states artist Susan Schuppli in relation to her project *Impure Matter* (*figure IV*, 2009), is "to understand that images taken at a distance, that the aesthetic realm of our emergent remote sensing technologies, is also the realm of radical imagining and seeing"[6]. The possibility space of such imaging technologies resides, for Schuppli (2012), in what she understands as the fundamental inseparability of all matter. Matter instantiates the non-distinction state where, as in the dust clouds emerged after the collapse of the World Trade Center – the object of her project – "the very act of looking is also and act of intervening". As her analysis of the dust unveils, the radical character of sensing technologies consists precisely on their capacity to root new distinctions. Only after her forensic remediation, dust becomes a material witness: "dust becomes political when its intricate materiality is exposed and ultimately returned to the image".

The act of vision is an act of intervention. The surfaces of the world –fields, deserts, rivers and dust– are produced (and reproduced) as radically mediated surfaces. Vision cuts and creates the distinction: the one that prepares the world as image, "for its construction and exchange as information, in the new political economy where information is a commodity", in the words of media

theorist Sean Cubitt[7]. The appropriation and speculative imagination around these ways of seeing open a space of exploration: the one of possible deviations from the unidirectional sense of their terraforming drift.

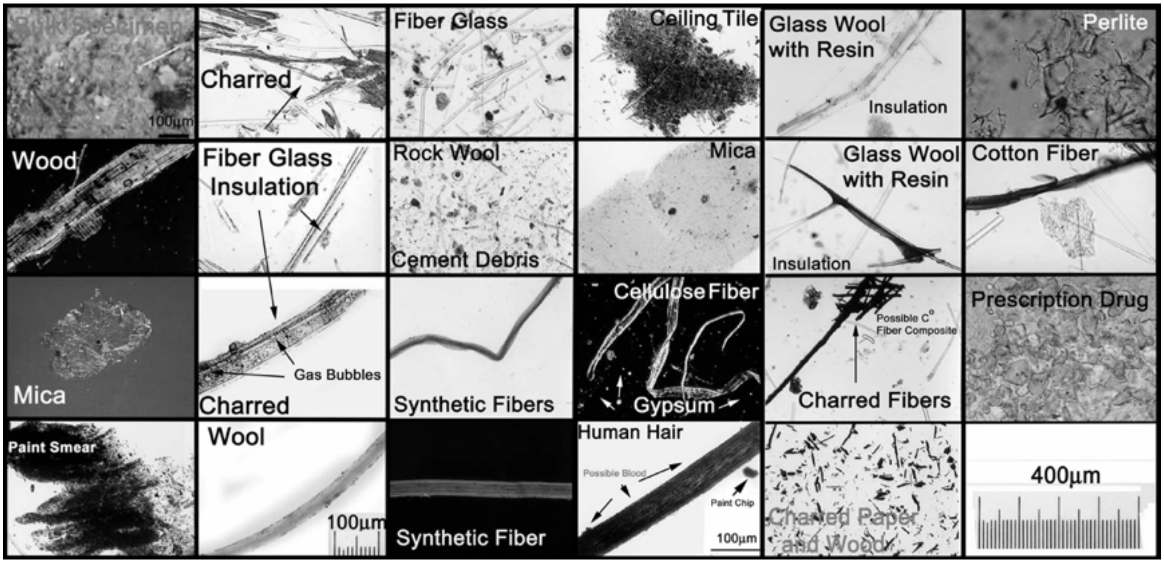

Bulk Specimen
100µm
Charred
Fiber Glass
Ceiling Tile
Glass Wool with Resin
Insulation
Perlite
Wood
Fiber Glass Insulation
Rock Wool
Cement Debris
Mica
Glass Wool with Resin
Insulation
Cotton Fiber
Mica
Gas Bubbles
Charred
Synthetic Fibers
Cellulose Fiber
Gypsum
Possible C° Fiber Composite
Charred Fibers
Prescription Drug
Paint Smear
Wool
100µm
Synthetic Fiber
Human Hair
Possible Blood
Paint Chip
100µm
Charred Paper and Wood
400µm

Figure IV: Image of the project *Impure Matter* (2009) by Susan Schuppli.

Notes

1. On this double transformation of territory, both in visual as well as infrastructural terms, see Gil-Fournier, A., 2017. *Seeding and Seeing. The inner colonisation of land and vision.* APRJA A Peer-Reviewed Journal About, Machine Research 6.1 www.aprja.net/seeding-and-seeing-the-inner-colonisation-of-land-and-vision/
2. Doygu Demir, *Blue Butterflies - On Shadow Sites I-II and the Work of Jananne Al-Ani.* Broadsheet - Contemporary Visual Art and Culture 41 (2012).
3. Manuel DeLanda, M., *A Thousand Years of Nonlinear History.* (Zone Books, New York, 2000).
4. The substitution cypher replaces each of the letters of the initial message with a different one –and always the same–. This way, if we replacement rule is to take the following letter in the alphabet, we would cipher EARTH as FBSUI. Messages encoded with this method are easily broken if long enough: the different letters in a language follow a recognisable statistical distribution, which the replaced ones would follow too.
5. Mario Gaviria, Jose Manuel Naredo, Juan Serna, *Extremadura saqueada: recursos naturales y autonomía regional.* (Ruedo Ibérico, Barcelona, 1978).
6. Susan Schuppli, "Impure Matter: A Forensics of WTC Dust", in: Pereira, G. (Ed.), *Savage Objects.* (Imprensa Nacional Casa da Moeda, Lisbon, 2012, 140).
7. Sean Cubitt, 2014. *The Practice of Light: A Genealogy of Visual Technologies from Prints to Pixels.* MIT Press, Cambridge, Massachusetts, (2014,107).

artists

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contributors

Patrizia Constantin is a final-year PhD Researcher in Curatorial Practice and an Associate Lecturer (Contextualizing Practice) at Manchester School of Art (Manchester Metropolitan University). Her PhD explores digital decay through a material turn in curatorial practice. She currently holds an MA in Curatorial Practice from PAHC (Postgraduate Arts and Humanities Centre – Manchester Met). She is also research assistant to artist and Professor Alice Kettle.
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Abelardo Gil-Fournier is an artist and researcher whose work addresses the material interweaving between the contemporary image and the living surfaces of the planet. His practice, featured and discussed in international venues and publications such as Transmediale or e-flux, can be accessed via:
www.abelardogfournier.org

Martin Howse is occupied with an artistic, interdisciplinary investigation of the links between the earth, software and the human psyche. For the last sixteen years he has pioneered numerous open-laboratory style projects and performed, workshopped, lectured and exhibited in galleries, venues and festivals across Europe, North and South America.
www.1010.co.uk

Rosemary Lee is an artist and media theorist whose work investigates interrelations between technologies and processes of natural science, manifesting complex webs linking machines, living things and the environments which they inhabit. Working from themes including media geology, hybrid ecology and posthumanism, her research brings together hybrid influences from conceptual art, philosophy of media, science, technology and literature. Rosemary is currently a PhD fellow at the IT University of Copenhagen in the Department of Digital Design.
www.rosemary-lee.com

Cedric Smarts is a science fiction author from Manchester, UK. Shortlisted for the H.G. Wells Award, he is also the creator and editor-in-chief at VHS Revival, An Ode to the Halcyon Days of Home Video.
www.vhsrevival.com

suggested readings

Geoff Cox and Jacob Lund, *The Contemporary Condition: Introductory Thoughts on Contemporaneity and Contemporary Art* (Berlin: Sternberg Press, 2016).

Kristoffer Gansing, “The Myth of Interactivity or the Interactive Myth?: Interactive Film as an Imaginary Genre,” Malmö University, School of Arts, Culture and Communication – K3 (2003:39): www.citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.577.6981&rep=rep1&type=pdf

Beryl Graham and Sarah Cook, *Rethinking Curating: Art after New Media,* (Cambridge, London: MIT Press, 2010).

Hertz, Garnet and Parikka, Jussi, “Zombie Media: Circuit Bending Media Archaeology into an Art Method”, *Leonardo, Vol. 45, No. 5,* (2012), 424-430.

Errki Huhtamo, “Resurrecting the Technological Past: An Introduction to the Archaeology of Media Art”, *InterCommunication, No.14* (2005) www.gebseng.com/media_archeology/reading_materials/Erkki_Huhtamo-Resurrecting_the_Technological_Past.pdf

Timothy Morton, *The Ecological Thought* (Cambridge, MA: Harvard University Press, 2010).

Jussi Parikka, *A Geology of Media* (Minneapolis London: University of Minnesota Press, 2015).

Jussi Parikka, *A Slow Contemporary Violence. Damaged Environments of Technological Culture* (Berlin: Sternberg Press, 2016).

Christiane Paul, “The Myth of Immateriality: Presenting and Preserving New Media” in *MediaArtHistories,* ed. Oliver Grau, (Cambridge: The MIT Press, 2007), 251-274.

Siegfried Zielinski, *Deep Time of the Media: Toward an Archaeology of Hearing and Seeing by Technical Means* (Cambridge, Mass.; London: MIT, 2006)

List of artworks

Cory Arcangel & Paper Rad
Super Mario Movie, 2005
Hacked Nintendo Entertainment System Super Mario Brothers cartridge, Nintendo Entertainment System game console, video projection, and artist software, dimensions variable.

Cory Arcangel
Vai/Lakes, 2014
1920x1080 H.264/MPEG-4 Part 10 looped digital file (from lossless QuickTime Animation master), media player, 65" flat screen, armature, various cables).

Cory Arcangel
Jeans/Lakes, 2016
1920x1080 H.264/MPEG-4 Part 10 looped digital file (from 11 lossless TIF masters), media player, 65" flat screen, armature, various cables.

Martin Howse,
Test Execution Host, 2018
Computer, Monitor, Keyboard, Junk PC components: CPUs, motherboards, RAM; rocks: Iron Pyrites, Stibnite, earth; 3x glass chemical flasks on table with pipes to water pipes and nozzles; Diluted Potassium ferricyanide and Ferric ammonium citrate solutions (commonly used in photographic processes); Distilled water; 3x water Pumps; WS-16-60 drylin® W linear guide system (2m); Pi Camera; Raspberry Pi; Arduino and control electronics for pumps and stepper motor, cogs and timing belt; Laboratory power supply for motors and pumps; 5v power supplies for Arduino and Raspberry Pi; WW-16-60-10 drylin linear guide system head; Table 300cmx80cm; Plastic sheets).

Emma Charles
Fragments on Machines, 2013
HD Video, Single screen projection, 16:9; audio, colour, 17 minutes.

Emma Charles
Surfaces of Exchange (1), 2012
C-type, 40 x 30 inches.

Emma Charles
Surfaces of Exchange (2), 2012
C-type, 40 x 30 inches.

Rosemary Lee
Molten Media, 2013-2018
2 vitrines, decomposed electronics, melted computer, keyboard and mouse (Macintosh Classic II), sand.

Shinji Toya
3 Years and 6 Months of Digital Decay, 2016-2019
Internet artwork, burned CD-ROM .

Rosa Menkman
To Smell and Taste Black Matter (1), 2009
Experiments with compression artefacts (video: Rosa Menkman, sound/music: Extraboy, Rosa Menkman and Skype).

Rosa Menkman
To Smell and Taste Black Matter (2), 2009
Experiments with compression artefacts (video: Rosa Menkman, sound/music: Extraboy, Rosa Menkman and Skype).

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birthday

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STATENS
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1885 ONWARDS

2. The flyer

**THE
HOLDEN
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machines
will
watch
us
die

machines will watch us die

9th april — 11th may 2018

cory arcangel
emma charles
martin howse
rosemary lee
rosa menkman
shinji toya

The fascination with immateriality defines our day-to-day interaction with digital technology. Due to the rising urge to live an idealistic social media existence, it appears that our attachment to the natural world is becoming increasingly compromised. On the surface, the digital is about information exchanges and technological advances, but what lies beneath the shiny interface of digital culture? *machines will watch us die* explores digital decay as a process that encompasses different timescales and materialities. Information travels on components made of rare earth minerals and ores. By linking materials belonging to deep time–Earth's geological timescale–to the immediacy perceptible to humans, the artworks visualise a variety of responses to digital decay.

In the exhibition, a feeling of nostalgia for the technological past is combined with a sense of anxiety for an unknown future. The artists share a set of concerns that relates digital decay to themes of consumerism, obsolescence, memory, loss and failure.

admission free

preview
6th April: 17:30–19:30

opening hours
Monday–Friday: 12:00–18:00
Open late on Thursday until 19:00

events

exhibition tour led by patrizia costantin
19th April: 18:00–19:00

talk and screening with emma charles
8th May: 16:00–18:00

machines will watch us die _ the symposium
11th May: 13:00–18:00

The Holden Gallery, Manchester School of Art
Grosvenor Building, Cavendish Street
Manchester, M15 6BR

For details of all our events please check out The Holden Gallery website

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The production of *Molten Media* by Rosemary Lee was kindly supported by Statens Kunstfond.

This exhibition is curated by Patrizia Costantin as part of a PhD in Curatorial Practice at Manchester School of Art.

Manchester Metropolitan University
MANCHESTER SCHOOL OF ART
G . F SMITH 1885 ONWARDS
The Font
STATENS KUNSTFOND

3. The press release

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machines will watch us die

Cory Arcangel - Emma Charles - Martin Howse
Rosemary Lee - Rosa Menkman - Shinji Toya

9th April - 11th May 2018

Preview: 6th April 5:30 - 7:30 pm

The fascination with immateriality defines our day-to-day interaction with digital technology. Due to the growing popularity of augmented-reality headsets and the rising urge to live an idealistic social media existence, it appears that our attachment to the natural world is becoming increasingly compromised. On the surface, the digital is about information exchanges and technological advances, but what lies beneath the shiny interface of digital culture? *machines will watch us die* explores digital decay as a process that encompasses different timescales and materialities. Information travels on components made of rare earth minerals and ores. By linking materials belonging to deep time – the million-year timescale of Earth's ecological cycles – to the immediacy perceptible to humans, the artworks visualize different responses to digital decay.

In the exhibition, a feeling of nostalgia for the technological past is combined with a sense of anxiety for an unknown future. The artists share a set of concerns that relates digital decay to themes of consumerism, obsolescence, loss and failure. Throughout the show, the boundaries between the material and the immaterial are constantly questioned to reveal the impermanence of all things digital, and show how digital decay is shaping future archaeological scenarios for the digital culture of our time.

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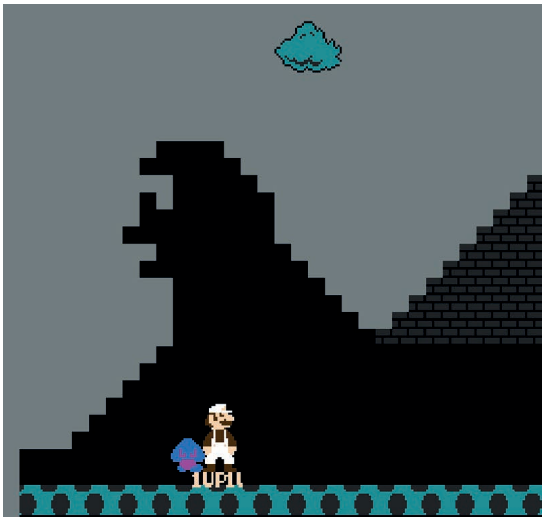

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Fragments on Machines, 2013

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Notes to Editors

machines will watch us die is curated by Patrizia Costantin as part of her practice-based PhD in Curatorial Practice (at the Postgraduate Centre for Arts and Humanities at Manchester Metropolitan University). The research investigates digital decay through a material turn in curatorial practice. She also works as an Associate Lecturer and a Research Assistant to artist and Professor Alice Kettle.

Cory Arcangel's solo exhibitions include *Hors les Murs* (2015), at FIAC Paris, France; *The Source* (2015) at The New York Art Book Fair, MoMA PS1, New York; *This Is All So Crazy, Everybody Seems to Famous* (2015) at Galleria D'Arte Moderna e Contemporanea di Bergamo; and *Pro Tools* (2011) at the Whitney Museum of American Art, New York. Arcangel has participated in group exhibitions such as *Age of Terror: Art since 9/11* (2017), at Imperial War Museum, London; *Electronic Superhighway* (2016 – 1966) (2016) at the Whitechapel Gallery, London, UK; and featured in Nouveau Festival (2015) at Centre Pompidou, Paris. Archangel is represented in collections such as Galleria D'Arte Moderna e Contemporanea di Bergamo, Bergamo; Museum of Modern Art, New York; and Smithsonian Museum of American Art, Washington.

Emma Charles' recent solo exhibitions include *And the Earth Screamed, Alive* (2016), at South Kiosk in London, and *Surfaces of Exchange* (2014), at Jerwood Visual Arts Project Space in London. Selected group exhibitions include *Open Codes*, ZKM (2017) at the Museum of Contemporary Art in Karlsruhe, Germany; *Ghost on the Wire* (2016) at Objectifs Gallery, Singapore. Her work also featured at Marl Video Art Award (2014),at Museum of Sculpture Glaskasten, Marl, Germany. Charles' film works have been screened at *East End Film Festival* (2017), Hackney Picturehouse, London; *Speeding and Braking: Navigating Acceleration* (conference) (2016), Goldsmiths, London, UK; and *31st Kassel Documentary Film and Video Festival* (2013), Kassel, Germany.

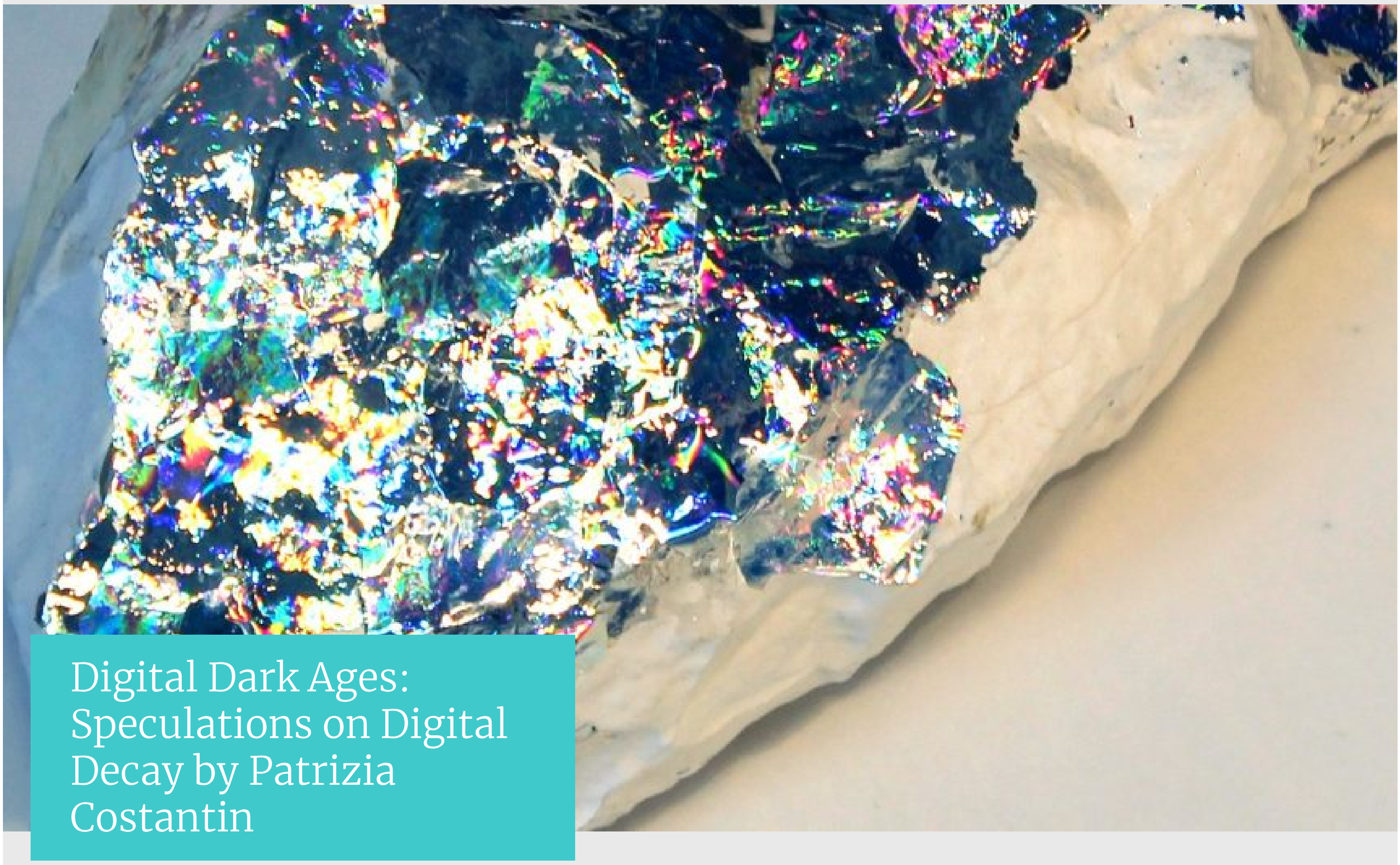
Martin Howse's recent exhibitions and performance include: *Transitio Festival,* Mexico City (2017); T*he House of Dust*, Darling Foundry, Montreal (2017); *Ecologies Excursion*, Transmediale, Berlin (2017); *Haunted by Algorithms*, Galerie YGREC, Paris (2017); *Alchemie des Neuanfangs*, Gorki Theater, Berlin (2016) *Dissolutions*, Perte de Signal, Montreal (2016); and *Sketch towards an Earth Computer*, Museu Coleção Berardo, Lisbon (2016). He also featured in a variety of workshops: *Shift Register workshop*, Transmediale, Berlin (2017); *Circulations workshop*, Concordia University, Montreal (2016); and *Earth coding workshop* at The University of Tokyo (2016).

Rosemary Lee has had solo exhibitions which include: *The Typesetter's Ruminations* (2015) and *Stepping into the Impossible* (2013) at Galerie Gilla Lörcher Contemporary Art, Berlin; *Artifacts* (2015), Palais des Beaux Arts, Vienna; *and It happens that the stage sets break down* (2009) at LivingRoom Gallery, Chicago. Group exhibitions include *A New We* (2017), at the Kunsthall Trondheim, Trondheim; *Interactor* (2014) at Victoria Art Center, Bucharest; Going Dark", *Art Hack Day/LEAP/transmediale*, Berlin (2013); *MONO//TON//POLY//CHROM* (2012), at Freies Museum Berlin; and *The Yield* (2009), Heaven Gallery, Chicago.

Rosa Menkman has shown in a number of solo exhibitions including *Institutions for Behind White Shadows* (2017), at Transfer Gallery, New York; DCT: *Syphoning* (2017), at Haus der Elektronischen Kunste Basel; *Resolutions Disputes* (2015) at Transfer Gallery, New York; and *Xilitia* (2015) at Istanbul Moving Image Art Fair. Menkman has presented works in group exhibitions also, such as *0,1 // assume both* (2016) with Browser Based at Cimatics, Brussels; *Dance with flARmingos* (2016), at Queens Museum, New York. Since 2012 Menkman has been curating exhibitions on Glitch Art: filtering failure, glitch genealogies, glitch moment/ums.

Shinji Toya has recently had an Online Residency at Arebyte, *forgetting.online* (2017). Toya's work has been featured in various group shows, including Art Licks Weekend 2017: *Making + Re-Imagining* on the Thames Beach by AltMFA; *Dystrophies: The Wrong - New Digital Art Biennale* (2016) at the UK pavilion by Arebyte Gallery; and *Self-discipline and Speculation* (2013) - Beijing New Media Arts Triennial, Beijing Film Academy.

4. Published articles and essays



Digital Dark Ages: Speculations on Digital Decay by Patrizia Costantin

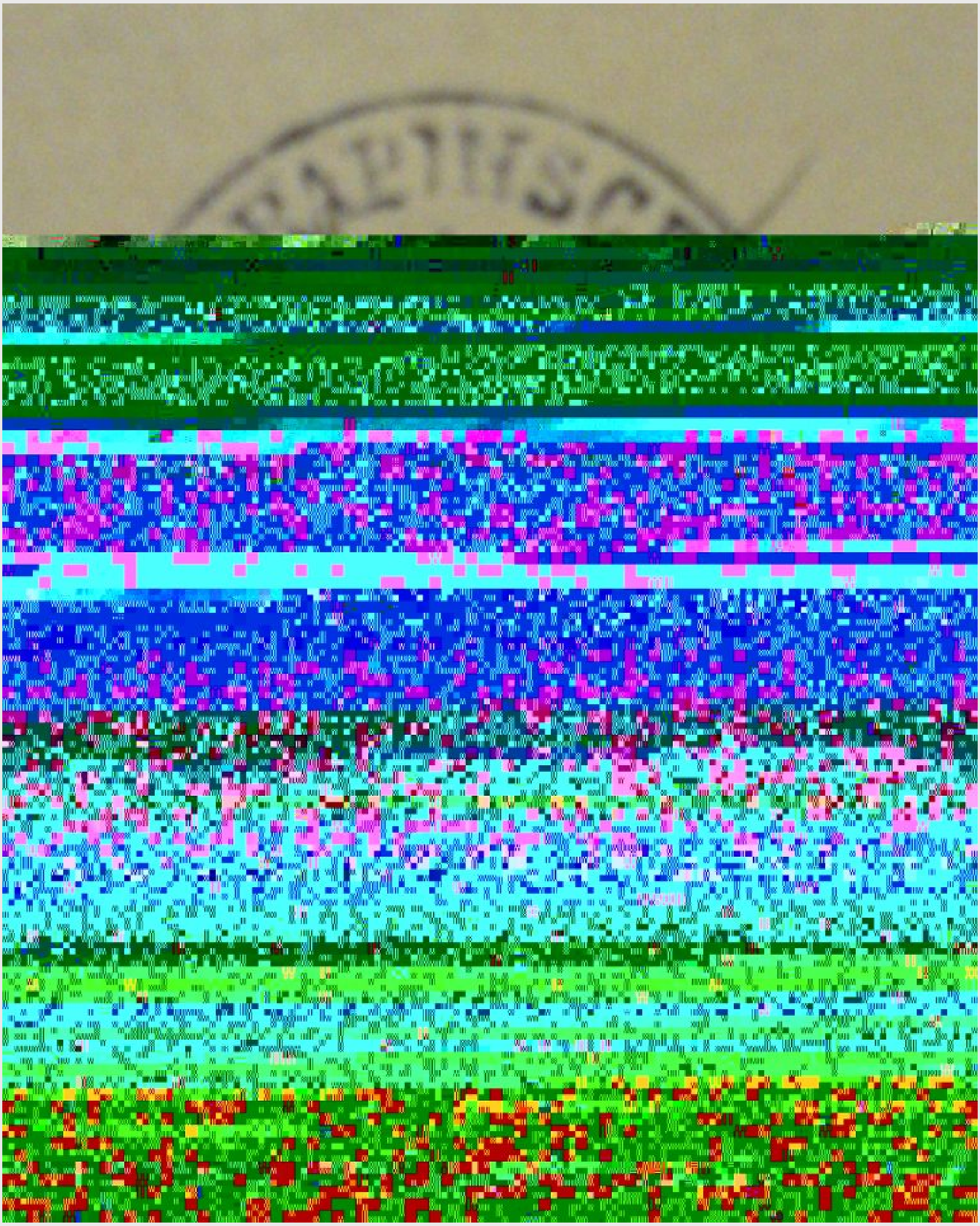
Digital Dark Ages: Speculations on Digital Decay by Patrizia Costantin \\

Sun 17 Sep 2017

> ‘‘The world is suffering from a dark and silent phenomenon known as ‘digital decay’ – anything stored in computerized form is vulnerable to breakdown and obsolescence.’’
>
> Bruce Sterling (2004)

The above quote by Bruce Sterling concisely summarises the widespread understanding of digital decay as a process that only affects the immaterial data stored, shared and uploaded on the Internet. A quick Google search on ‘Digital Decay’ confirms that it is a topic that belongs to the field of digital preservation and heritage: data, file and all the immaterial information that has been produced in digital format is at risk under the threat of digital decay.

As part of this year's AND Festival, the exhibition *Digital Dark Ages* sets out to explore the intricacies of wider systems that feed into the idea of digital preservation while also questioning the ethics and parameters of archiving: what should and what should not be preserved for future generations? Departing from the more traditional investigations aimed at preserving the immaterial digital content which determine and record our lives, *Digital Dark Ages* embarks on a journey of explorations aimed at uncovering alternatives to past digital preservation strategies.



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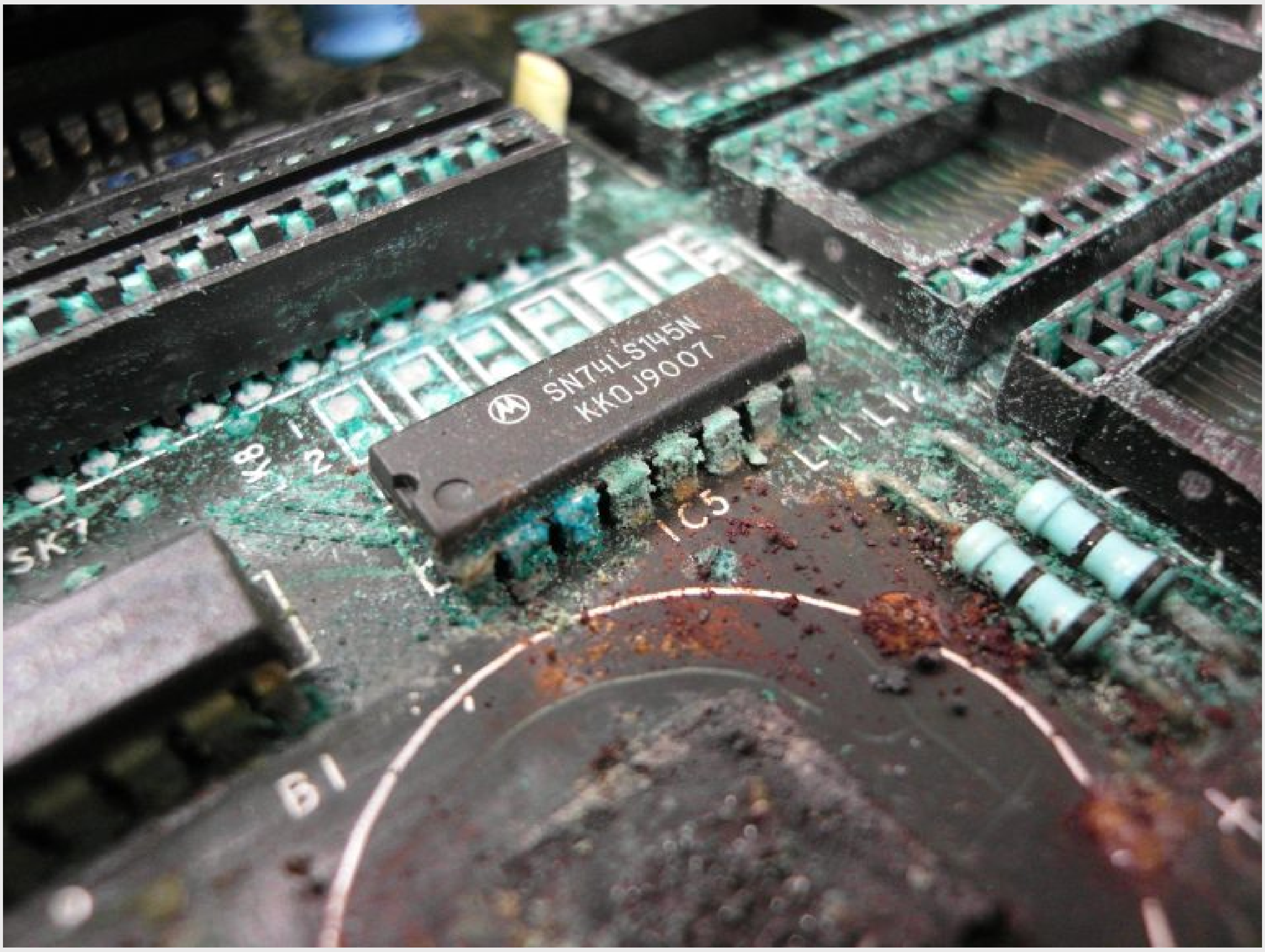
The emphasis on creating strategies dedicated to preserving the immaterial, does not come as a surprise. Since the early days of digital culture, we have been subjected to a relentless promotion of its potential. From the cybernetic poetics of the mid 1980s portrayed by William Gibson in *Neuromancer* (1984) to the latest innovations in augmented reality, we have always been invited to interact with the digital in its immaterial expressions. The actions of sending emails, streaming content and navigating the Web to look for any possible kind of information have now become our second nature. Most of our daily activities rely on immaterial systems, and even if we need physical devices in order to perform them, our interest towards them is limited to their design, power and reliability. We need these devices to get the job done, and once they become outdated or break, it is more convenient to buy a new device rather than look after obsolete software or repair it.



By Binarysequence [CC BY-SA 3.0] Source:
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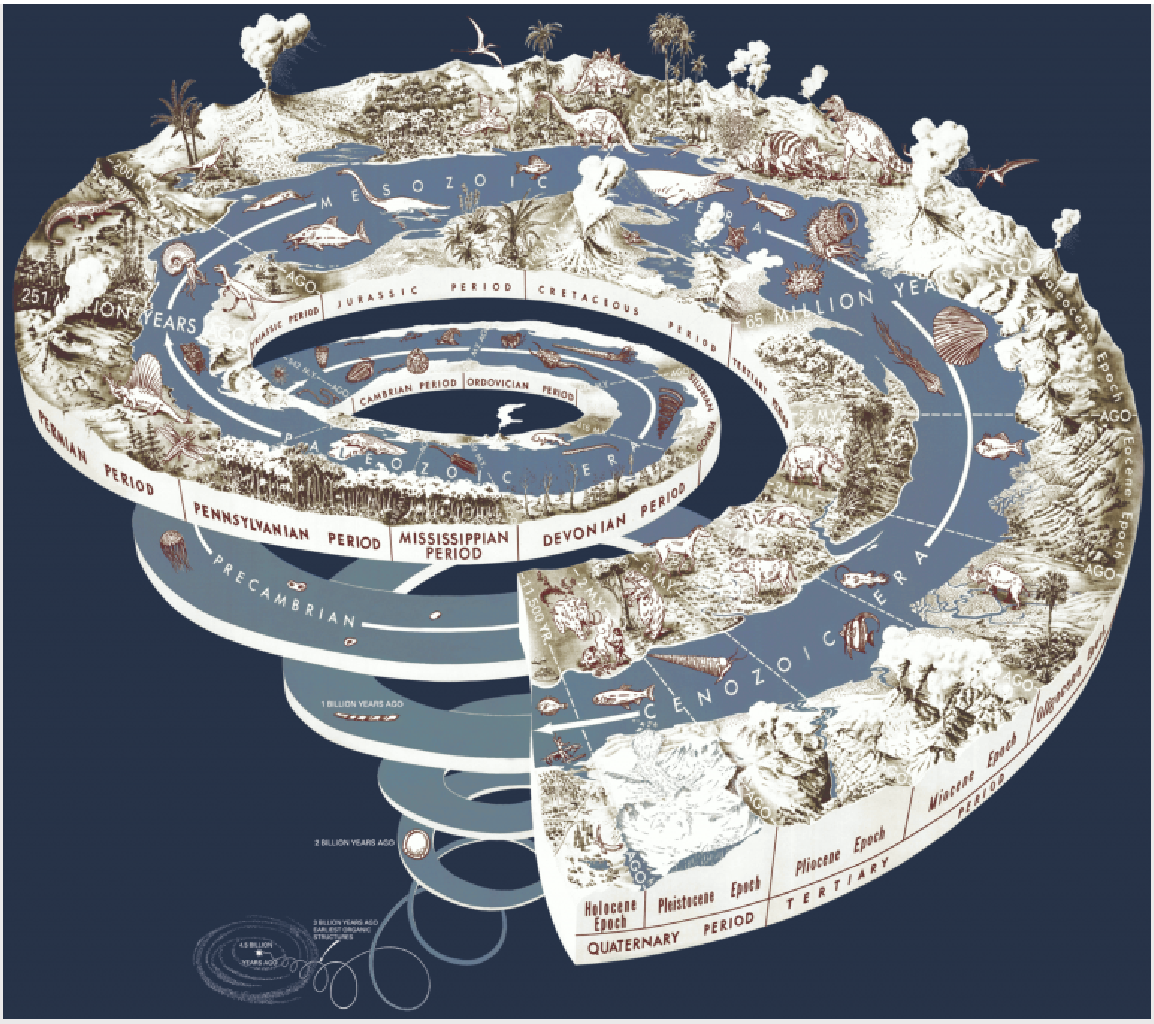
There has been little public awareness about the connections across what has been promoted as immaterial and the materials with which these devices are built. Between the immediacy of the interaction with the digital device's interface – as the site where the information we retrieved online becomes visible

– and the infrastructure on which this information travels. A call to re-establish a link between the immaterial and the material can only expand what we already know about digital decay into unknown territories. For instance, data decay or data rot is immediately visible to us as its consequences appear on the interface, but what happens beyond the surface of the digital device? Is digital decay an underlying condition that affects the digital device beyond our interaction with its immateriality?

If we dig inside our smartphones, tablets, laptops, or fitbits, we'll find the metals, ores and minerals on which information travels and is stored. In his book, *A Geology of Media* (2015), Jussi Parikka refers to digital materials as geological substrate. The connections between digital culture and geological materials become evident in *Digital Dark Ages*, an exhibition that questions our understanding of the digital by installing the artworks in the Treak Cliff cavern in the Peak District. Much of the cavern was formed by an underground river many hundreds of thousands of years ago. The group show provocatively overexposes the link between digital devices, geological formations and deep time or geologic time. It will be interesting to see how the works featured deal with the notion of 'deep time'. The term 'deep time' was coined by Geologist John McPhee in his book, *Basin and Range* (1991) but has been re-appropriated by a generation of artists, writers and thinkers today, including Jamie Allen, Martin Howse, Siegfried Zielinski, Jussi Parikka and many more. Taking up a 'deep time' perspective means that longer histories may produce deeper meanings of the worlds in which we live. What 'Deep Time' also offers us is a way out of being trapped by progression or determinism, so we don't have to think about digital archives but digital histories.

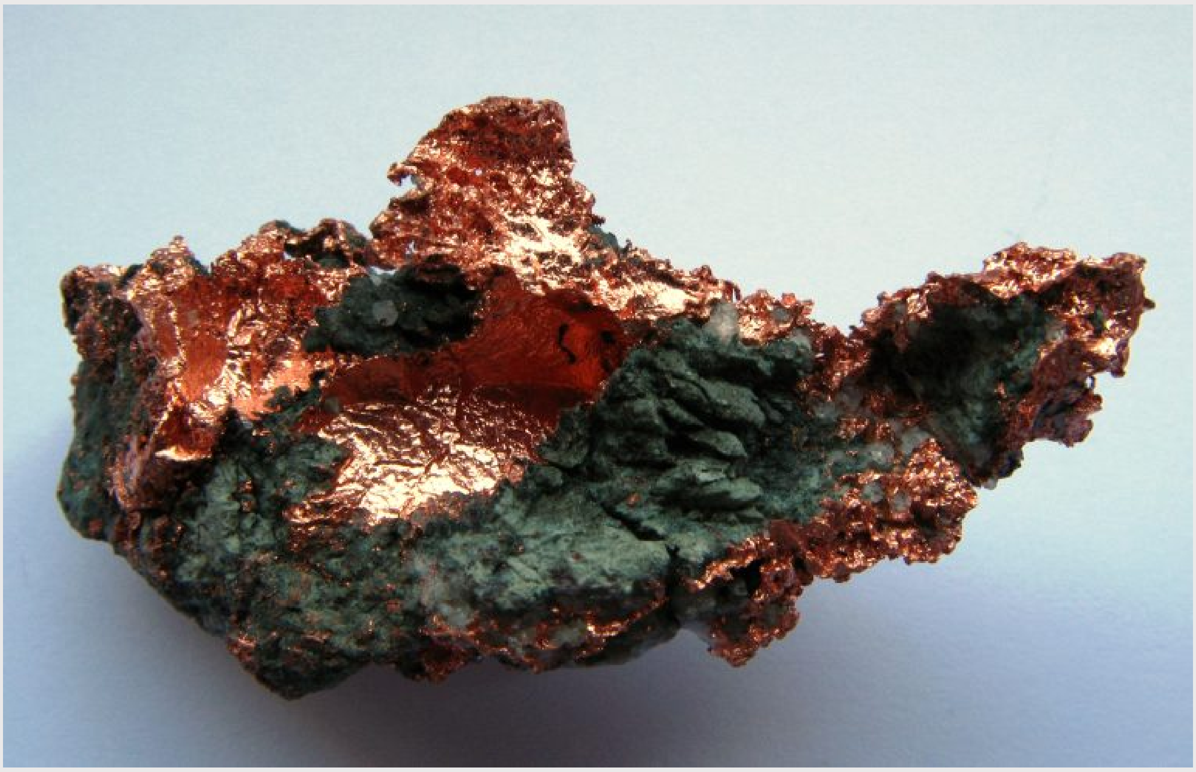

MESOZOIC ERA
251 MILLION YEARS AGO
TRIASSIC PERIOD
JURASSIC PERIOD
CRETACEOUS PERIOD
65 MILLION YEARS AGO
PALEOZOIC ERA
CAMBRIAN PERIOD
ORDOVICIAN PERIOD
SILURIAN PERIOD
PERMIAN PERIOD
PENNSYLVANIAN PERIOD
MISSISSIPPIAN PERIOD
DEVONIAN PERIOD
PRECAMBRIAN
1 BILLION YEARS AGO
2 BILLION YEARS AGO
3 BILLION YEARS AGO EARLIEST ORGANIC STRUCTURES
4.5 BILLION YEARS AGO
CENOZOIC ERA
Paleocene Epoch
Eocene Epoch
Oligocene Epoch
Miocene Epoch
Pliocene Epoch
Pleistocene Epoch
Holocene Epoch
TERTIARY PERIOD
QUATERNARY PERIOD
11,500 YR. AGO

By United States Geological Survey. Source: https://commons.wikimedia.org/wiki/File%3AGeological_time_spiral.png

By way of investigating the geophysical qualities of digital materials, a provoking, more material idea of digital decay arises. I define digital decay as a form of material agency, a process to which no materials are estranged, not even the components of the digital infrastructure – often misunderstood as a purely immaterial system with unlimited possibilities in terms of storing, sharing and connecting. This idea of digital decay is detached from preservation initiatives such as Jon Ippolito's Variable Media Questionnaire which aims at recording the artists' intentions in order to preserve the artwork beyond the physicality of its media. It also offers more material approaches to explore Rhizome's Net Art Anthology which, over a 2-year period, will restage, decontextualize and archive one artwork a week. Its aim is that of establishing a critical relationship with the limitations of digital culture, of rethinking the man-made construction of technological obsolescence, and of engaging audiences with current discourses on the Anthropocene.

Digital decaying materiality belongs to deep time. However, its consequences have already begun to interfere with humanity and nature. Leaking obsolete devices left to decay in e-waste dumpsites are toxic for the environment and represent a health hazard for human beings who, especially in impoverished areas of the world where these repositories are located, 'mine' the precious minerals and ore within the devices for little profit. These are just two examples that suggest that there is much more to digital decay beyond narratives of immaterial preservation.

Particularly relevant to exploring decay is what **Shift Register** is doing as part of their Earth Observatory Array Elements series. Their investigation aims at recording on obsolete devices the decaying signals emitted since the big bang. Rocks, obsolete technology and cosmic rays participate in this site-specific installation that links deep space, hard-drives, floppy disks and the geology of the cavern in an installation that I hope will inspire much more needed artistic interventions on to new ideas of digital decay and its atemporal connections with both today's world and unknown futures.



Copper is a mineral used in CPU heat sinks, wiring and cables, printed circuit boards, computer chips. Image by Ra'ike. Source: https://commons.wikimedia.org/wiki/File%3ANative_Copper_(mineral).jpg

The shorts in **Rare Minerals** reveal daunting aspects of digital infrastructure's materiality: from data centres to abandoned mines, these artistic explorations invite the audience to reflect on the connections between the digital and the socio-economic and political discourses that define our globalised 24/7 world.

Everything In Slices Part V by Martha McGuinn speculates on the practice of archiving as fossilisation. Her machine is able to speed up fossilisation processes that from a deep time timescale now last a few days. The notion of future fossil is an interesting one as it evokes issues of obsolete media and e-waste, while also visualising the discarded device in its process of rejoining the planet's ecological cycles.

Digital decay creates a link between human histories and the environmental scale of material ecologies. Although it operates on geological timescales, its effects on culture have become increasingly difficult to ignore. The decaying materiality affecting nature, and therefore by default humans, is able to reveal an unpleasant side of digital technology, far from the hype associated with technological advances as a necessary element partaking in humanity's evolution. Challenging the old logic of human power over nature, artworks that engage with the foreseeable consequences of the materiality, left behind as obsolete, reveal that technology is not eternal and immaterial as it has been marketed to unsustainably generate profit.

This short article is an open invitation for the AND audience to consider such an idea of decay when visiting the festival. In my practice, I actively seek to rethink curatorial strategies for digital art in relation to the material turn. Through the curation of *machines will watch us die* (The Holden Gallery – 13 April/25May 2018), an informed idea of digital decay – repositioned within deep, geological space-time coordinates – will be explored as a material process partaking in ecologies of environmental duration.

Patrizia Costantin.
18 September, 2017

Patrizia Costantin is a curator and PhD researcher at Manchester School of Art (MMU). Building on media archaeology, she is researching the concept of digital decay through a 'material turn' in curatorial strategies for digital art. She is currently curating machines will watch us die (The Holden Gallery, 13 April/25May 2018),an exhibition exploring digital decay as an idea that revolves around processes of environmental formations, timescales of non-human nature and the debris of digital culture.

@PattiCostantin

Featured image: Rosemary Lee, *Disc Rot* from the series Molten Media, 2016.

Recent Journals \\

A how-to guide for nnn.freeport.global

Heavy Metal Detector: Bands announced for Arts by the Sea inscribes the manifold ontological, social, and geophysical conditions of the present in its very form, elaborating a challenge to the much-maligned Nature/Culture dichotomy while also indexing the generative potentialities that exist outside the strictures of capitalism. In this respect, plastiglomerate delineates the edges of capitalism's contradictory logic, constituting a sculptural approach to the problem identified by Moore when he argues that capitalism has effectively run out of new natures to construct and to appropriate. In so doing, plastiglomerate functions to embed environmental concerns with broader and wide-ranging social and economic problems, rejecting the historical isolation of environmentalism as a niche political interest group in favor of a view that entangles nature in debates around capital, labor, inequality, and materiality.

Notes

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[4] Michael Fried, "Art and Objecthood," *Artforum* (June 1967); reprinted in *Art and Objecthood* (Chicago: University of Chicago Press, 1998), 153.

[5] James Nisbet, *Ecologies, Environments, and Energy Systems in Art of the 1960s and 1970s* (Cambridge: MIT Press, 2014), 6-7.

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[8] Jack Burnham, "Systems Esthetics," *Artforum* 1, no. 7 (1968): 31-35.

[9] Kirsty Robertson, "Plastiglomerate," *e-flux* 78 (December 2016), https://www.e-flux.com/journal/78/82878/plastiglomerate/

[10] Arjun Appadurai, "Introduction: commodities and the politics of value," in *The Social Life of Things: Commodities in Cultural Perspective*, ed. Arjun Appadurai (Cambridge: Cambridge University Press, 1986), 26.

[11] Margaret Iversen, "Readymade, Found Object, Photograph," *Art Journal* 63, no. 2 (2004): 50.

[12] Jaimey Hamilton-Faris, *Uncommon Goods: Global Dimensions of the Readymade* (Bristol: Intellect, 2013).

[13] André Breton, *Mad Love* (Lincoln: University of Nebraska Press, 1987), trans. Mary Ann Caws, 13-15.

[14] Johanna Malt, *Obscure Objects of Desire: Surrealism, Fetishism, and Politics* (Oxford: Oxford University Press, 2004).

[15] Kirsty Robertson, "Plastiglomerate: A Provocation," in *Kelly Jazvac: Plastiglomerates* (Toronto: Durable Good, 2017), ed. Kelly Jazvac and Petrina Ng, 63.

Chapter 10

Curating digital decay: machines will watch us die

Patrizia Costantin

The exhibition *machines will watch us die* (The Holden Gallery, 6 April-11 May 2018, Manchester, United Kingdom) presented a radical idea of digital decay that distances itself from discourses on preservation. The show tested the idea that a *material turn* in curatorial practice would produce new insights on digital decay whilst exploring it through the material issues of *contemporaneity*.[1] Throughout the curatorial project, digital decay was defined as a form of material agency, a process to which none of the materials on which digital culture functions are estranged. The components of the digital infrastructure – often misunderstood as a purely immaterial system with unlimited possibilities in terms of storing, sharing and connecting – represented the focus of the curatorial investigation on digital decay. Insights on materiality and deep time and the *artwork as time machine*[2] – ideas that belong to the field of Media Archaeology – informed the methodology and allowed for a comprehensive exploration of digital decay through the material ecologies of digital culture.

This idea of digital decay was applied to a study of artworks exploring digital materiality and temporality. The aim was not to gain new insights on medium-specific preservation strategies, but to establish a critical relationship with the limitations of digital culture, as a way to engage audiences with current discourses on the Anthropocene. Therefore, the curatorial investigation was circumscribed to a period of about four decades. Notions of immateriality and behaviors, from which widely adopted approaches to curating new media art such as Beryl Graham and Sarah Cook's[3] were developed, were rethought in order to build a methodology that was able to look at the material issues addressed in the exhibition. Art practices that address digital decay through the exploration of material ecologies engage on a visual level with notions of materiality, immateriality and temporality of the digital, and offer the basis to conceptualize a more material idea of digital decay.

The exhibition presented a number of artworks that conveyed digital decay as an underlying condition of digital materiality. As such, it is a process that cannot be experienced directly because the metals, ores and rare earth minerals, with which digital components are built, respond to an ecology that unfolds along deep time coordinates – what Jussi Parikka calls a scale of time of geological duration.[4] The curatorial study argues that it is possible to reveal digital decay through a selection of artworks exploring how digital decay is affecting the contemporary.

Image 10.1 Exhibition shot of *machines will watch us* die at the Holden Gallery, Manchester, 2018. Image by Patrizia Costantin.

The methodology was developed following the conviction that embedding media studies to the curatorial would inspire new ways of looking at artworks which are critically concerned with the materialities and temporalities of the digital. In *machines will watch us die,* digital materiality was experienced without the interactivity and the immateriality that define our 24/7 interaction with all things digital. The return to analogue as a form of critique of digital culture was reinvented by subtracting interactivity, and by recontextualizing immateriality within a more comprehensive notion of materiality that considers the digital in all its formations. The exhibition looked at the digital in its pre-interactive condition, which is intended as a stage of digital culture's material ecology. *machines will watch us die* immersed the viewer in a presupposed digital environment where interactivity, the immediacy of the internet and the immaterial take on the digital have been reinterpreted as a way of emphasizing the material nature of technology's infrastructure. The show is thought to create a sense of apprehension, a feeling of *unease*[5], whose aim was that of engaging the audience with the exhibition.

This unease also emerged from the realization that the digital is acting like a zombie, no longer of value in our consumerist economy, but still *intra-acting*[6] with the contemporary, as the exhibition revealed. The feeling of being haunted by something that is missing in the show increased that unease. The idea of *zombie media*[7] as abandoned materialities that interfere with processes of digital culture further added to this sentiment. An artwork that is made of or that addresses *zombie materialities* is able to explore digital decay through, for example, digital materials that stopped performing due to obsolescence, system failures and decomposing infrastructures. It also deconstructs digital materiality and reveals its core material nature to the audience.

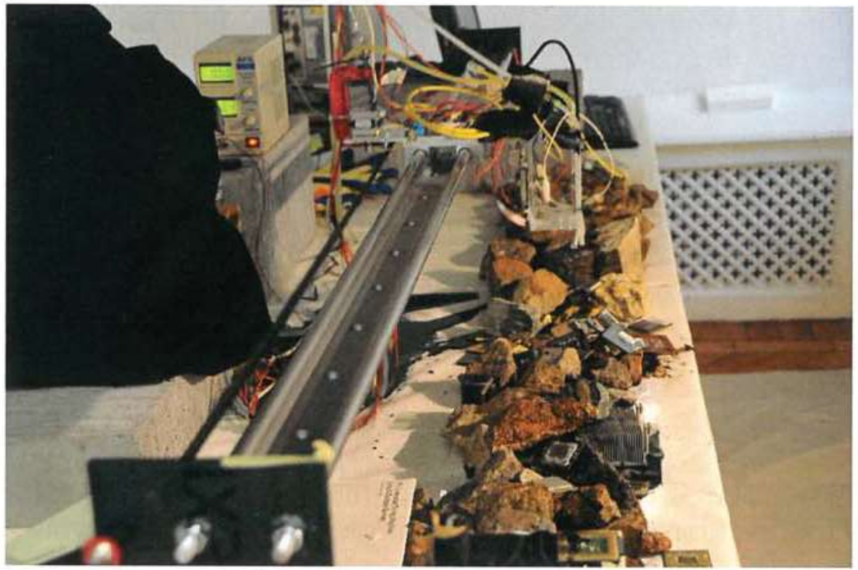

Image 10.2 Martin Howse, *Test Execution Host.* 2018. Detail. ©Martin Howse. Image by Patrizia Costantin.

The curatorial strategies used for *machines will watch us die* argued against the myths of interactivity[8] and immateriality[9], and invited the viewer to experience the ways in which digital decay, as a process that affects materials which belong to deep time coordinates, overlaps with human time. Interactivity is a characteristic through which the digital has been widely promoted and experienced. As media archaeologist, Erkki Huhtamo states *"interactive technology has been* *marketed as a patent solution for almost any problem in today's post-industrial society."* [10] Also, Kristoffer Gansing refers to this myth as something that '*'is sold as an 'empowering' phenomenon, but which in reality functions as a basic constituent of a regulative consumer society.*"[11] By emphasizing the lack of interactivity that the works embody, in favor of a different way to engage with digital materials – via intra-acting – the exhibition presented the viewer with an alternative idea of digital technology that is not progress-oriented, and which is subjected to the material process of digital decay.

As digital decay was defined as a form of material agency partaking in the Anthropocene, Karen Barad's definition of intra-action[12] and Jane Bennett's notion of agency[13] provided a framework for the curatorial methods. Barad[14] explains the idea of interaction as a relationship between bodies that maintain a level of independence. Instead, intra-action depicts a relationship in which bodies intra-act in co-constitutive ways and responsibilities are distributed. It follows that the audience were not asked to interact with, or act upon, a work to complete it, but were instead invited to engage in a relationship that creates new meaning. Bennett's writings on trash contextualize decay as a form of material agency in relation to discarded electronics and outmoded software. Like Bennett's reconsideration of the role of garbage within eco-political debates, *machines will watch us die* thrived on the idea that the obsolete, disused and forgotten materialities of the digital perform their agential nature in the Anthropocene.

machines will watch us die featured works by Cory Arcangel, Emma Charles, Martin Howse, Rosemary Lee, Rosa Menkman and Shinji Toya. Among the works on show are Martin Howse's new work (previously only shown in a prototype form in Montreal) *Test Execution Host*, Rosemary Lee's *Molten Media* and Emma Charles' *Fragments on Machines.*

Howse's *Test Execution Host* (2016-2018)[15] explored the way in which geological materials are embedded in the history and functioning of technology. It also addressed the ways in which they are subjected to environmental change, thus linking computation to processes of natural material formation, transformation and decay. *Test Execution Host* referenced the life and work of computing pioneer Alan Turing. The work took the form of a primitive Turing Machine which wrote, computed and read ones and zeroes on a tape composed of rocks and samples from local mining regions. Due to the raw qualities of the materials, the Turing program was executed poorly. The piece revolved around building a computing device with materials that belong to Earth ecologies.

For the exhibition, Howse constructed a material environment for the viewer to experience the dialogue between code, technology and nature. The work responds to the show's call to explore the decaying processes of digital materiality: a sense of nostalgia for the adventurous technological past of Alan Turing was combined with the anxiety for an unknown toxic future. The cyanotype fluid that allows the machine to function contains cyanide, a compound which is used in the industrial extraction of gold from low-grade ores. Turing also took his own life by consuming cyanide.

Image 10.3 Rosemary Lee, *Molten Media*, 2013-2018. Detail. ©Rosemary Lee. Image by Patrizia Costantin.

As a strategy to make visible the convergence of human and nonhuman temporalities, the artworks were considered as *time machines.*[16] Building on Erkki Huhtamo, such a conception of the artwork invited the viewer to become aware of the different timescales of digital culture and introduced them to the cyclical idea of time. This idea was evident in Rosemary Lee's *Molten Media.*[17] The work explored the materiality and temporality of the digital through opposing durations: earth materials responding to deep time and the quick turnaround of the culture of disposal. By linking real-time needs of accumulation to the temporality of digital infrastructure – that instead respond to deep time: the much slower timescale of the metals and minerals on which information travels – the work was representative of materials that belong to nonhuman history, and thus revealed a decaying process that goes beyond human temporality. Lee's work challenged the myth of linear progress that does not allow for a comprehensive analysis of technological media.

By acknowledging planned obsolescence as a cause of human and environmental crisis in the Anthropocene, artworks such as *Molten Media*, which explored the interconnections between materials' temporality and technology's lifespan in the market, represented a useful tool in showing that digital decay influences society and nature on a timescale way longer than humanity's. Lee's work counteracted obsolescence by repurposing obsolete devices. By melting, she translates processes of digital decay into human timeframes. Her work invited the viewer to imagine and quantify the immense impact that obsolete and discarded devices will have when re-entering the planet's ecological cycle.

Image 10.4 Emma Charles, *Fragments on Machines*, 2013, Film still. ©Emma Charles.

Emma Charles' *Fragments on Machines* (2013) is a 17-minute film narrated by Barnaby Kay. The work explored the material relationship between the physical infrastructure of digital culture and the architectural landscape. *Fragments on Machines* showed the audience that data centers and their overwhelming infrastructure are hidden, not only in remote locations such as Iceland, but in cities such as New York. Close-ups of servers and data exchange were accompanied by Kay's voiceover. His emphasis on the fluidity of data was contraposed by images that show the imposing material side of digital immateriality.

The invisibility of digital infrastructure hidden within the city recalled the invisibility of digital decay: both are concealed to promote the distorted image of digital culture as purely virtual and immaterial. In the third part of the film, images of water implemented this sense of fluid immateriality against the heavy physical presence of the infrastructure gathered in the previous section of the work. Water reconnected outside spaces with the inside of the building, and we were presented with the wet, leaky floor of the data center: an image that shows how transient the digital (both material and immaterial) is. Afterwards, this sense of ephemerality was passed onto the material infrastructure, as we were shown close-ups of deteriorating copper wires and cables, and everything appears precarious. In the background, we hear a sound that resembles an alarm, as operators wearing masks signify the dangers and toxicity that arise from working with decaying digital materials.

Digital materiality is made of materials that belong to geological history, are used in contemporaneity and respond to decaying processes of planetary scale. It has been intra-acting with nature since the beginning of time and will intra-act with the non-human long after humanity is extinct. Humanity does not directly intra-act with digital decay as such, but we intra-act with the phenomena created by decay – e-waste, pollution, information loss, human and environmental exploitation: all conditions defining the Anthropocene – that from deep time come to intra-act with humanity. Artworks exploring these conditions contribute to the wider discourses on the Anthropocene by revealing hidden aspects of what is promoted as technological progress. They also acknowledge the kind of agential capacity digital materiality has on social, political and environmental spheres.

The convergence of temporalities is explored in the exhibition through digital materialities in their different ecological stages. By questioning the apparently eternal feeling that the experience of deep time evokes, the show invites the viewer to reflect on a too-good-to-be-true conception of the digital. By debunking the infinite possibilities associated with virtual-only scenarios, *machines will watch us die* challenges assumptions that defy the digital as eternal and immaterial, and invite us to question the linearity and positivity of technological progress as digital materiality reveals the unsettling time of digital decay.

Notes

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[5] Jean François Lyotard, "The Sublime and the Avant-Garde," trans. by Lisa Liebmann, Artforum 22, no.8 (1984): 36–43.
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[14] Barad, *Meeting the Universe Halfway.*
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[17] Rosemary Lee's *Molten Media* was supported by a grant awarded by Statens Kunstfond, Denmark.

Chapter 11

A Poem - A Leaf

Alice Momm

In early November 2016, I embarked on a 3-week residency in I-Park in rural Connecticut with the intention of gathering a multitude of fall leaves to weave into a floating leaf carpet. The leaf carpet was to be exhibited in the spring of 2017, to unfurl from and levitate up into - the bright green canopy of a tree.

When I arrived at I-Park, however, I found that most of the woods had been decimated by a gypsy moth invasion. The trees were barren and those leaves that I found were small, brown and pocked with holes. I began to gather these broken leaves and started filling in the holes with other more colorful leaves in a symbolic gesture of repair.

On November 8, the results of the U.S. election came in and were so traumatic for me that for days I could not understand how to make art with the urgency needed to counteract this new political climate and the devastating impact it would have on our world. Instead, I wrote the following poem to my "repaired" leaf. And still I ask myself – in the face of quite possibly irreversible monumental forces, is metaphor enough?

Elegy for an Oak Leaf after the Gypsy Moth Invasion

MAKE ME WHOLE AGAIN.
I am trying.

It was hot and you were thirsty.
In a deafening roar a militia of mouths bit into your newly green flesh.
And, later, twice as many wings aloft,
a fluttering swirling orgy.
In its wake lay yellow felty sacks
for next year.
And you – small and misshapen – pocked with holes.
Persisted through two seasons
until you fell.

MACHINES WILL WATCH US DIE

This paper is a reflection on the theme and methodology of machines will watch us die *(The Holden Gallery, 6th of April – 11th of May 2018, Manchester) an exhibition that explored digital decay through artists addressing material manifestations of digital culture. machines will watch us die was conceived as a platform for research, a space to explore how a material turn in curatorial practice could be undertaken. Adopting media archaeology as conceptual framework, the research behind the show questioned if curatorial strategies for digital art – which were developed at the end of the Nineties and based on new media's immaterial behaviours of interactivity, computability and connectivity – are still relevant in addressing art practices that deal with the very much material issues of the contemporary. Full essay title: "machines will watch us die – a material turn in curatorial practice".*

Text by Patrizia Costantin

In museum studies, most discourses on digital decay gravitate towards discussions on preserving the work in its immaterial state, suggesting strategies such as software migration and emulation.[xvi] This tendency on focussing on digital immateriality is also present in many of the curatorial strategies developed at the end of the 1990s and theorised in the early 2000s. If the emphasis on immaterial behaviours defined new media curating at a time when the hype for interaction was thriving, how could more recent studies in the field of media archaeology and media geology inform curatorial methodologies for digital art? *machines will watch us die*'s exploration of digital decay embodied the question: why has there not yet been a material turn in curatorial practice? Rethinking digital decay through a materially-driven and post-medium approach to curating digital art was deemed the appropriate place to start to reposition the curatorial within the *material turn*[xvii] (Brown, 2010).

machines will watch us die set out to offer a concrete example to show that curatorial strategies based on interactivity and immateriality are not suitable to explore a 'radical idea of digital decay that revolves around processes of environmental formations, timescales of non-human nature and the debris of digital culture'.[xviii] The exhibition featured artworks by Cory Arcangel, Emma Charles, Martin Howse, Rosemary Lee, Rosa Menkman and Shinji Toya. All of the works addressed different aspects of digital decay depending on the materialities and temporalities embedded in each artwork. The methodology was based on a notion of digital materiality that encompassed the digital in all its formations rather than merely favouring immateriality and interaction. Through an exploration of digital decay as material process entangled with contemporaneity[xix], the aim of the show was that of taking the viewer into a journey from the 1990s utopian future that foresaw the Internet as the means to solve every single problem in the world (Huhtamo, 1995), to dystopian material scenarios already forming in the present.

Framing the Curatorial

The adoption of media archaeology as a conceptual framework shaped the definition of materiality on which *machines will watch us die* was based. Beyond the misconception that defined it as immaterial, an informed notion of digital materiality represented the theoretical foundation that allowed us to explore the decay of the digital in art practice. Since the

Eighties, two main parallel lines of inquiry have dominated the debate surrounding materiality in art practice. One began with the dematerialization of the art object[xx] and linked with the immateriality of networks, virtual scenarios, and software technologies. The other emerged from new materialist perspectives and focused on politico-environmental concerns linked to digital technology, such as surveillance, planned obsolescence, health, and environmental issues. This second tendency is linked to Les Immatériaux[xxi], a landmark exhibition that explored the impact of technological progress through the interconnections between information networks and its physical apparatus at the dawn of digital culture in 1985. On a similar note, the investigation on digital decay stemmed from art practices that engage with the materiality of media technology to explore the connections amongst art, technology, geology, human and nonhuman temporalities.

From Media Archaeology we learn that metals, ores, rare earths and minerals are crucial to both the material and the immaterial processes of the digital, and that these materials – the geological assemblage[xxii] – belong to deep time temporalities (Parikka, 2015). Digital materiality is thus entangled in material processes of different timescales, one of which is the process of digital decay. In *machines will watch us die*, an understanding of digital materiality as dynamic, unstable, unpredictable and subject to contingency[xxiii] overcomes the presupposition that the digital lasts forever. It is in the materiality of the artworks that the ability to challenge the hype associated with the digital manifests, and the reconceptualization of decay begun to take shape. The artworks are thus considered independently from their medium-based classification as new media or digital art.

The exhibition explored the ways in which digital materiality decays: from the smallest metal, ores, and minerals components that make up CPUs and microchips to the impalpable information that travels on them. In 'A geology of media' (2015), Jussi Parikka speaks of digital materials as geological substrate. His understanding of materiality is integrated into the exhibition together with the notion of deep time[xxiv]. As Parikka (2015) and Zielinski (2006) argue, there is the need to explore *deep time* to comprehend materiality and challenge the myth of linear progress that does not allow for a comprehensive analysis of technological media. However, if Zielinski uses deep-time to analyse the interconnections between art and science – and does so in going back to Medieval times – Parikka calls for an alternative notion of deep time in order to understand the materiality of technology by way of investigating the geophysical qualities of its materials. The chemical properties of aluminium and copper, for example, are crucial in determining the duration of the decay of digital materials.

A temporal definition of digital materiality allowed the show to question the boundaries posed by a conception of time tied to the post-fordist era of capitalism. Common to both the conceptual frame and the narrative of the exhibition is a methodological approach to investigating materiality that goes beyond the myth of linear history and progress to challenge the supposed newness of digital culture. By adopting such ideas, the artworks featured in the show are considered representative instances of materials that belong to nonhuman history, and that reveal a decaying process that goes beyond human temporality. Digital decay is defined in the exhibition as a material process that entangles a variety of materialities and temporalities that span from the material to the immaterial, from linear human histories to the planet's environmental cycles. Distant from our way of experiencing the digital in the everyday, such an idea of decay critically questioned whether present practices of human and environmental exploitations, adopted to sustain the so-called technological progress, should be rethought in terms of a wider ecological context.

To take out the emphasis on the present, the show was conceived as a representation of the contemporaneity of digital decay. Terry Smith (2015) defines curating as a practice that is "able to offer strikingly original and acute interpretations of the complexities and contradictions of our contemporaneity" (Smith, 2015, 15). Smith's understanding of the purpose of curating as "to exhibit (in the broad sense the show, offer, enable the experience of) contemporaneity as these are manifest in art present, past and multitemporal" (Smith, 2012, 29) was applied to *machines will watch us die*. The exploration of digital decay through the hidden materialities and temporalities of digital culture through which it manifests was activated by the artworks: ‘By linking materials that belong to deep time – the extremely slow time of nature’s ecological cycles – to the immediacy perceptible to humans, the works in the exhibition visualize glimpses of a decaying process that from deep time reaches present temporalities’.[xxv] Adopting a temporal reading of materiality rather than the medium allowed to explore decay within non-human timescales such as deep time, a temporality so vast that comprehends the past, present, and future of humanity.

To allow for a comprehensive exploration of digital decay through all the materialities and temporalities entangled in the digital, the curatorial process began with questioning curatorial strategies for digital art that emerged from the myth of immateriality (Paul, 2008) and were based on immaterial behaviours. The myth of immateriality that surrounds the ideas of materiality, medium and new media, monopolizes the curatorial debate, either in relation to preservation (Paul, 2008) or, more generally, in regard to widely applied curatorial strategies. An example of these is Beryl Graham and Sarah Cook's approach to curating new media art based on the behaviours of interactivity, connectivity and computability. They argue that new media are best addressed not in terms of their materiality, but as behaviours, and that is necessary to update curatorial strategies in relation to how these behaviours have modified the production, dissemination, and preservation of new media art. The insistence on both behaviours and the medium dismiss the material nature of technology, and was therefore deemed unsuitable for showing an informed idea of digital decay that shapes itself against the conviction that the digital is purely immaterial.

If there is the need to rethink curatorial strategies for digital art, Cook and Graham’s approach, which considers behaviours instead of materials, misses the point, adds to the confusion associated with the myth of immateriality (Paul, 2008), and is not useful in addressing art that explores socio-political and environmental issues through digital materiality. Their reflection fails to acknowledge that, at the time of their writing (2000s), new materialistic modes of thinking in contemporary art practice and media theory offered alternative methodologies to develop curatorial strategies not based on immaterial behaviours, but focused on media’s intrinsic material processes. An analysis of interactivity in relation to Karen Barad’s distinction between interaction and intra-action[xxvi] exemplifies why Cook and Graham’s approach is not appropriate in addressing art practices dealing with digital ecologies and temporalities.

In Cook and Graham’s ‘Rethinking curating’ (2010), interactivity is defined as a behaviour of new media art useful in reinventing curatorial strategies, and in documenting the audience’s way of interacting, as opposed to participating, with digital artworks. What they mean with *interaction* is the ‘’*acting upon each other*’’ (Stern, in Paul 325: 2016). Such an understanding emphasises the work as an interactive tool rather than revealing its hidden processes and agencies (Stern, 2016). Furthermore, an approach to curating built on interactivity would lead us to place the viewer directly at the centre of the experience (Manning, 2009 in Stern, 2016). As an anthropocentric-based behaviour, interactivity clashes with the more materialistic conception of agency such as Karen Barad’s intra-action (2007).

Shifting away from interactivity, the exhibition became a space in which all the participating entities – the artworks, the audience, the artists, the theme, the exhibition and the curator – intra-acted, rather than interacted. Barad’s idea of intra-action was here adopted as a means to invite the audience to intra-act with the exhibition. For Barad, the fundamental difference among the two is in the relationship that they respectively form. Interaction defers and deflects responsibility (Barad, 2007). This, within the context of the exhibition, would mean that us – the curators, the artists and the audience – put a greater emphasis on the tools we interact with than the processes, issues and discourses that the works explore. In intra-actions, instead, responsibilities are distributed between the constitutive entities, which are all exercising agency within the established relationship. The show thus created a space for intra-actions between digital materiality and human beings whilst repositioning human actions before digital materiality and its temporalities. The artworks invited the audience to rethink interactivity[xxvii] in relation to the digital, and to “*alter our sense of self as we reflect on material and discursive practices that constitute a world of interconnectedness in its state of becoming*” (Barad, 2007).

Substituting the immaterial behaviour of interaction with a materially-orientated understanding of intra-action, *machines will watch us die* defied linear time, the subject-object dichotomy, and throve on the convergence of the past, present, and future histories –in line with the idea of contemporaneity (Jacob and Lund, 2016) – compressed within the materials of digital devices. Promoting intra-activity over interactivity, in the exhibition, the emphasis was on the fluid materiality of digital technology and its ecologies, of which decay is an example. The exhibition thus suggested that, even if we cannot experience decay as such, we are intra-acting with it in the contemporary. It also invited the audience to rethink the role that humanity has in this complex system of relations. The curatorial methodology tested the conviction that by taking interactivity out of the exhibition narrative, the audience would have questioned why it was missing, and would have looked for alternative and less human-centered histories.

This approach based on the lack of interaction is contextualised in relation to the *return to analogue* as a way to critique digital culture of which Tacita Dean’s work is an example. Instead of returning to analogue technologies however, the limitations of digital culture related to digital decay were addresses through a *return to the pre-interactive condition of the digital*. Based on the notion of materiality adopted, there was no need to go back to analogue technology to critique digital culture because analogue and non-digital matter are already present within the digital device. The decision to avoid the binary opposition between the analogue and the digital organically developed from the adoption of a post-medium approach to the curatorial. *machines will watch us die* put forward the idea that we need to rethink our idea of digital materiality in more sustainable terms, and rethinking digital decay could be just one of the ways in which we can do so. What Erika Balsom (2014) describes as ‘anachronism of the authentic’ – an “*allergy to the mass (re)production of images, experiences, subjects, and objects*” and "a reaction to shifts with new media technologies at their core” – was integrated to the exhibition to denounce an uncontrolled desire for interactivity,[xxviii] the main cause for accelerating processes of obsolescence which are inversely proportioned to the environmental lengths of digital decay. Applied to the analysis of the very material components that are used to build digital devices, this tendency contextualized the anachronous nature of digital materiality. Thought as a tool to generate an alternative image of technology in the viewer, the lack of interactivity in an exhibition presented as a show on digital art, generated an uncanny feeling, a *reflexive unease* – “a sense of newness and amazement—not to simply affirm the seductive power of the new—but rather to trigger a ‘reflexive unease’ in our relation to things that we already dimly sense”[xxix] (Birnbaum Daniel and Wallenstein Sven-Olov, Online). Conceived as a vehicle to perceive digital decay, this ‘reflexive unease’ was achieved in the exhibition through a curatorial exploration of the artworks’ materialities, the way in which they addressed the idea of time and the way in which they were curated. The idea of the exhibition as a entanglements of temporalities also contributed to this feeling by urging the viewer, who was already affected by a non-interactive representation of the digital, to reflect on the role of digital decay within the contemporary.

The Exhibition

The aim of the show was that of creating an uncanny environment for the viewer to experience alternative understandings of digital culture through an exploration of digital decay. The works in the exhibition were selected for their ability to address aspects of digital decay through different materialities and temporalities, and not just their media. The exhibition narrative was developed around the co-existence of different temporalities and was inhabited by material works which acted as time-machines[xxx] and had the ability to blur the boundaries between the ‘distant past of material formations, recent but obsolete digital devices, present ethics of production and future legacies.’[xxxi] The straightforward image that time-

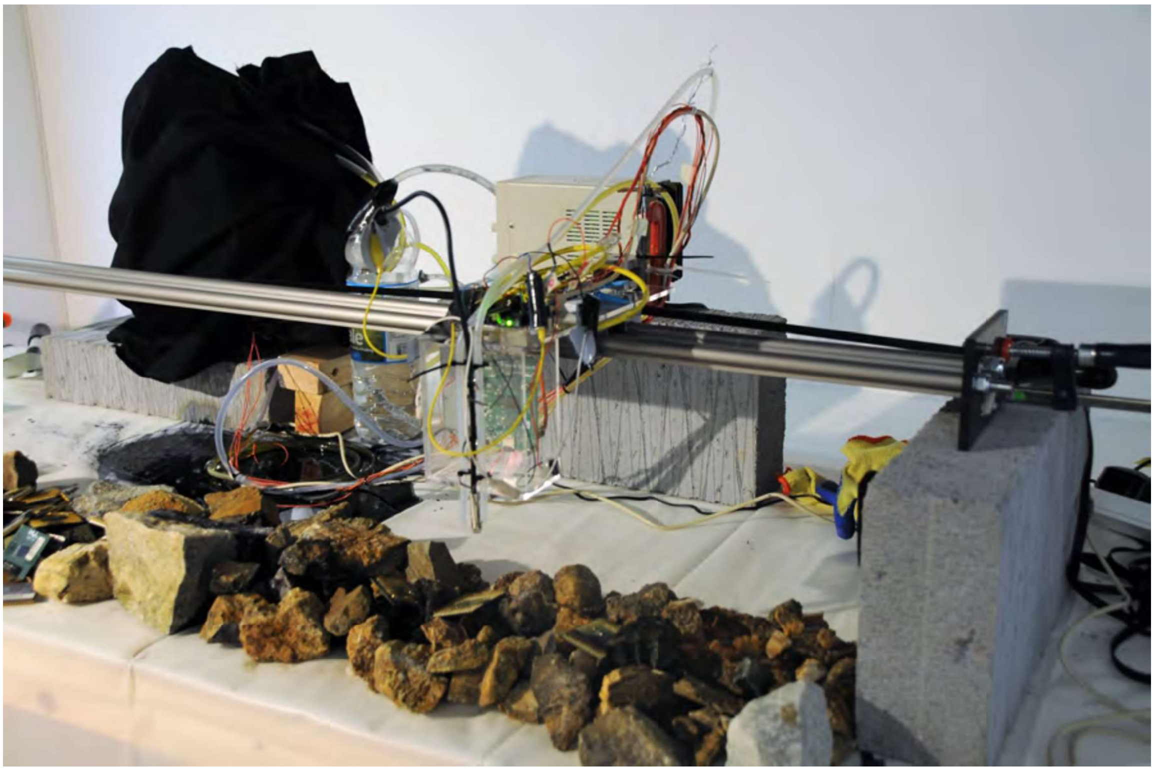
machines will watch us die
cory arcangel - emma charles - martin howse - rosemary lee - rosa menkman - shinji toya

machines will watch us die: Exhibition shot of *machines will watch us die*. On view: Cory Arcangel, *Jeans (Lakes)*, 2016 and *Vai (Lakes)*, 2013

traveling denotes was used in the rationale to explain digital decay as a process of transversal temporalities. The artwork conceived as time-machine interlinked different timescales of the digital with those of the audience, contributing to displacing the viewer's experience from the human present – through the *reflexive unease* – to the contemporaneity of the materials entangled with digital decay. The curatorial process was then developed to create this sort of unease. The selection and situation of the artworks was thought peculiarly to convey this uncanny feeling.

At the entrance, the first work that the audience intra-acted with was *Text Execution Host* (2018) by Martin Howse. The lack of interactivity as a strategy to reveal digital decay and introduce an image of digital culture through its limitations was embodied in this work: a deconstructed but still functioning Touring machine encapsulated as a laboratory style project which did not allow for interaction. The audience's view of the gallery space was then blocked by a projection box positioned in the centre. At the rear of the box, facing the entrance, the title was installed. On the right, the viewers were able to glance at one of the two prints from the series *Surfaces of Exchange* by Emma Charles (2012).

The idea of the exhibition as a space for the creative experience embodied in Lyotard's *unease* (1984) already surfaced in the title. *machines*[xxxii] *will watch us die* was thought as a provocative statement denoting dismal future scenarios for humanity – a situation in which the accumulation of obsolete machines, due to the inconsiderate use we make of digital devices, has taken over. Its aim was to make the audience think and question the role of digital technology in today's world, in relation to both our future and a posthuman world. As it was formulated as a statement, the audience was directly invited to question it throughout their experience of the exhibition. Questioning the preservation and survival of our species, which are jeopardised by our own inventions and quest for power over nature, added to this sense of discomfort that the show created. Why will machines will watch us die? What are they made of if they will outlive us? This was the primary way of engaging the viewers before immersing them into a process of decay that lasts longer than humanity does.

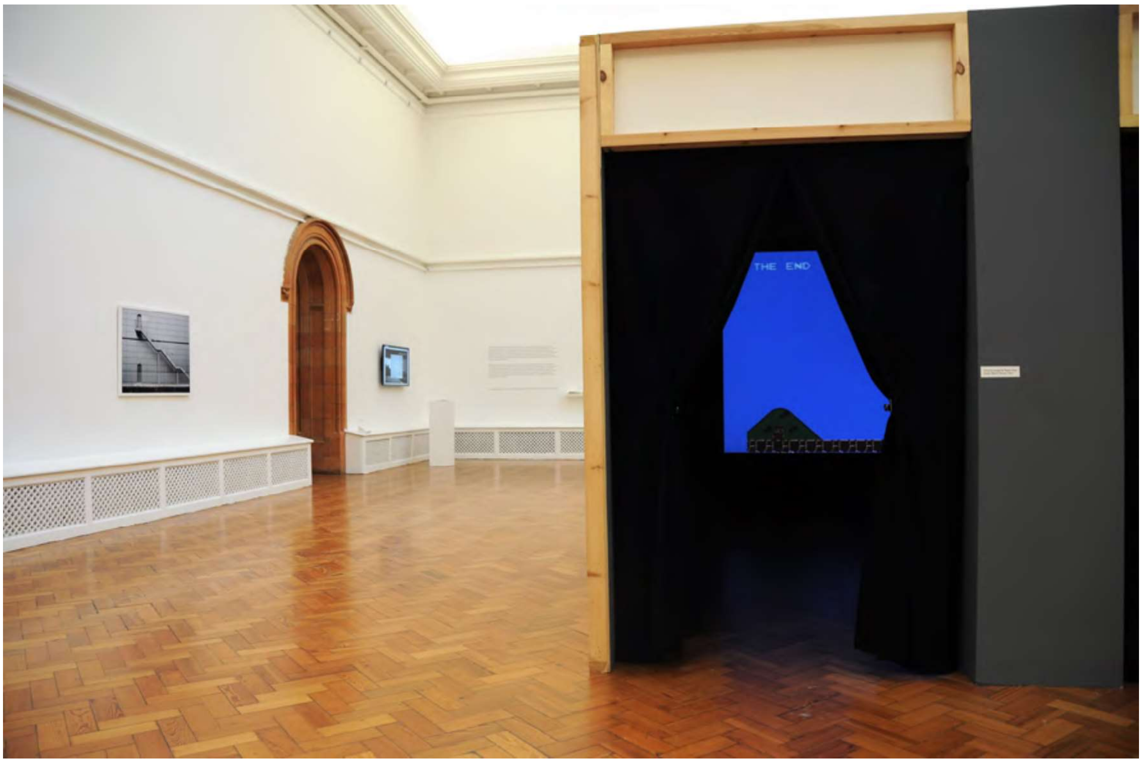


Martin Howse

Test Execution Host, 2018. Detail © Martin Howse

From the start, the show played with the opposition between revealing digital material processes and concealing them at the same time, mimicking the relationship we have with technology: the digital is everywhere, yet we cannot see it for what it really is. *Text Execution Host* addressed this dichotomy by deconstructing the computer to reveal the way in which immaterial information is produced. Shown as a lab-experiment as a way to respond to the artist's way of working,[xxxiii] *Test Execution Host* (*TEH*) explored the role that geological materials play within the production of information and the history of digital culture. The work visualised the exchanges between information and natural processes of environmental formations and decay that are usually hidden within the digital device. Samples of rocks from local mining sites and junk pc components took part in forming a functioning but leaky Touring Machine. The device, due to its material components, poorly wrote and read 1s and 0s on a tape composed by rocks such as iron pyrites. For the machine to function, pre-mixed cyanotype was dripped onto these rocks and water was pumped from the adjacent nozzle. Information was then read back from the tape by the moving the reader head which registered relative light and dark. As the head moved, the Turing program was executed. This cyanotype photographic process, introduced in the 19th century and used to make blueprints from technical diagrams. It involves cyanide, a compound which is used in the industrial extraction of gold from low-grade ores.

It is worth pointing out that Alan Turing committed suicide through the ingestion of cyanide. This double reference on Touring as computing pioneer but also as troubled human being added to the uncanny nature that the very material yet digital environment constructed by Howse already embodied. The deconstructed device malfunctioned, did not allowed for interaction and did not respond to the standards to which we are used to. The work was installed inside a box that restricted the audience's access to it as a way to stimulate the voyeuristic instinct. The use of light and the cut-out windows added



Exhibition shot of *machines will watch us die*. On view: Cory Arcangel and Paper Rad, *Super Mario Movie* (2005); Emma Charles, *Surfaces of Exchange* (2012)

to this game of revealing the very material nature of digital decay whilst concealing it at the same time just to remind us that digital materiality is carefully kept away from our sight.

Emma Charles' *Surfaces of Exchange* (2012) explored architecture as a shell for information storage and exchange. In suggesting that the digital infrastructure is hidden within a familiar landscape, it enforced the idea that digital decay is a material process difficult to perceive. However, it also suggested that it is closer to us than we might think. In *Surfaces of Exchange*, the physical infrastructure of digital culture is hidden within an imponent building that suggests the vastness and apparent inaccessibility of the infrastructure itself. The work focuses exclusively on the exteriors –on the *surface* – of what we know from the title is a data centre. The other edifices in the background position this desolate building at the edge of urbanization. Also, the location of the building near a field links to the idea that earth materials are at the basis of digital exchanges. Emma Charles' exploration of the materiality of digital technology continued in the film space with *Fragments on Machines* (2013). The artist's fascination with the materials spaces of digital culture dominated the narrative of this film. The action of exploring digital material infrastructure from the outside of the urban landscape – which initiated in Surfaces of Exchange – to hidden inside spaces, is here developed in a 17-minute film set in New York City. The artist takes us inside a luxurious period to remind us of the ubiquitous nature of digital materiality. Narrated by Barnaby Kay, this piece takes on a journey of exploration that repositions the digital and its materiality within timescales and spatial parameters comprehensible by human beings. Close-ups of copper wires, servers, and leaky underground spaces are accompanied by images of the Hudson river. Representing the relationship between Information and nature, the powerful image of the water flowing associates the digital to the passing of time, relating thus to processes of decay.

Throughout the film, the material entanglements between the infrastructure and information are also emphasised by Kay voiceover which counterpoises the daunting physicality or digital materiality in its wish of becoming fluid information. The precariousness of the data centre covert environment suggests that these are the places where we can see digital decay in action. Concealed on the surface by a very elegant building, digital decay is repositioned within underground coordinates that recall the geological nature of digital culture.

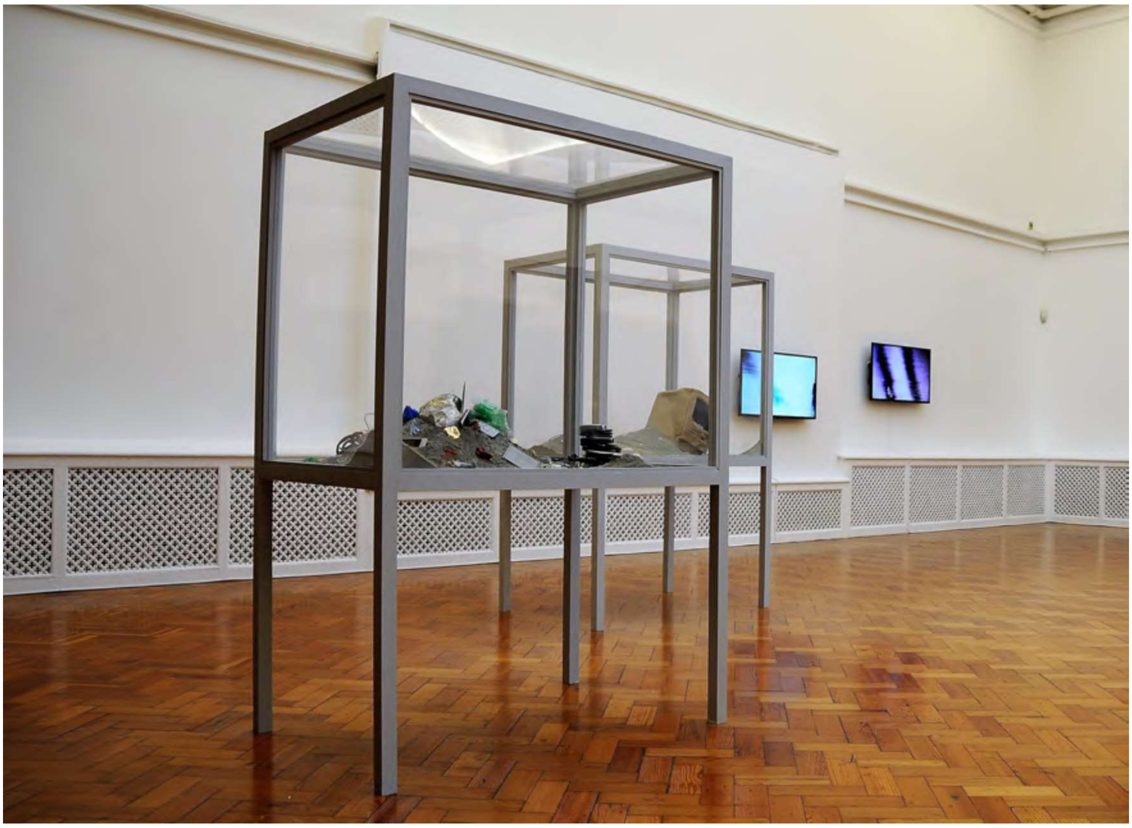
An important element that concurred to create the feeling of unease in the exhibition was sound, and in particular, sound bleed. Pervading the gallery architecture in full, even the entrance, the sound bleed was generated by *Super Mario Movie* (2005) by Cory Arcangel, *3 Years and 6 Months of Digital Decay* by Shinji Toya (7 April 2016 - 7 October 2019), *To Smell and Taste Black Matter (1)* and *To Smell and Taste Black Matter (2)* (2009) by Rosa Menkman. The sound bleed created an immersive experience – not just visual – for the viewer to experience digital decay. The different sounds from the three artworks were not contained intentionally. Sound bleed was in fact curatorially encouraged to influence the viewers' mood throughout the exhibition. Sound was also implemented as a strategy to ground the exhibition experience in the heterogeneous material nature of digital decay. Sound born out of a decayed Nintendo cartridge, a decaying Internet artwork and a corrupted file formed the soundtrack of *machines will watch us die*.

Inside the projection box installed in the centre is Arcangel's *Super Mario Movie* (2005). Its soundtrack is immediately recognizable and takes us back to the recent but already obsolete past of Super Mario Bros and the Nintendo Entertainment System. This is an example of a work that embodies different temporalities – among which we can find the nostalgic past of the Eighties and Nineties –and that evokes the lack of interactivity on which the exhibition narrative is based. In this 15-minute piece, Arcangel shows the correspondence between hardware and data decay by rewriting the video game internal narrative as an exposition of the decaying process of the cartridge's materiality. Arcangel created the movie by hacking a decayed Super Mario Bros 1984 cartridge for Nintendo. The graphics have been left intact to reveal an obsolete decomposing game set while Mario's appearance becomes involved with the metaphorical decaying process of life. Text extracts such as *"as a video game grows old, its content and internal logic deteriorate;* AND *...for a character caught in this break-down, problems affect every area of life"* have been incorporated into the video to ironically suggest that the reason why Mario's life is falling apart is the ephemerality embedded in the materiality of the device itself, planned to become obsolete through processes that speed up the environmental ecologies of its materials. This is a work that explored different durations and temporalities in relation to obsolescence: the decaying cartridge responding to deep time, the very recent past of the late 1980s when the game was released, the present of the exhibition, and the time scale of the audience that found it impossible to interact with the video game as they would normally do. *Super Mario Movie* invited the audience to intra-act with the idea of digital decay through the nostalgia instigated by an artwork revolving around the now obsoleted life of a pop-cultural icon.

3 Years and 6 Months of Digital Decay is a work by Shinji Toya that quantifies digital storage temporalities in relation to a scale of time not alien to humans. The project started in 2016 when Yami-Ichi, a sort of black market for digital-related goods, took place at Tate Modern. Artist Shinji Toya presented and sold CD-ROMs on which an audio file redirected the person who listened to it to a website (Arebyte Gallery). The Internet artwork constantly shows a video in a loop. The material component of the work is represented by the physicality of the CD-ROM, while the webpage, representing the immaterial, shows the video *The beauty of forgetting*. The video visualizes the way in which data is affected by the process of decay that the CD-ROM undergoes for three and a half years, a duration that corresponds to the average lifespan of a burned CD-ROM.

The video voiceover addresses digital decay in terms of memory and loss. In a similar way to Arcangel's work, digital decay has left the viewer with no possibility of interaction with the digital. This also raised questions such as, what if the Internet became obsolete? The piece revealed the correlation between material and immaterial decay, while also incorporating the audience into the process. Usually associated with guaranteed storage security, the CD-R's materiality – and, by association, the Internet – is here challenged by the passing of time, establishing a link between the loss of digital and human memories.

To Smell and Taste Black Matter by



Exhibition shot of *machines will watch us die*. On view: Rosemary Lee, *Molten Media* (2013-2018); Rosa Menkman, *To taste and smell black matter* (2009)

Rosa Menkman explored glitch, system failure, and noise in the form of the ephemerality of data and data obsolescence. Due to compression, decayed data is the protagonist in her work. Both visually and in terms of sound, the work recalled the loss of signal in analogue television sets. However, compression is a purely digital procedure that shows that digital information is not immune to processes that we might just associate with past analogue technology. What the work emphasised in the show was an inquiry into the future of digitally produced, stored and exchanged information: is this the destiny of all digital information produced in the present? The visceral yet delicate sound emerging from these two videos played in loop added to the uncanny feeling that contributed to displacing the viewer. We are familiar with data decay and information loss. However, if we reposition such issues in relation to preserving the human present for the future, we are left unsettled.

An inquiry about the future of digital culture is also present in *Molten Media* (2018) by Rosemary Lee. The installation addressed digital decay through the concept of future archaeology. The two vitrines contained digital devices in the form of future fossils. The vitrines were a clean rendering of traditional displaying methods of 19th-century science museums. By melting the devices and by reconnecting these obsolete technologies with their geological counterparts, Lee skipped a million year forward to explore the idea of the obsolete device as a fossil for future civilizations. Playing with deep time, the cyclical temporalities of the planet's ecosystem and the quick turnaround defining capitalist ethics of production, consumption, and disposal, *Molten Media* illustrated digital decay as a material process entangled with the present of humanity's constant quest for progress and overarching deep time temporalities that extend well beyond our civilization.

In *Molten Media*, obsolete non-inter-active devices came to terms with their natural components, visually relating digital decay to material processes of environmental timescale. Furthermore, the presence of sand in the vitrines invited the viewer to imagine the impact of obsolete devices when re-entering (and polluting) Earth's geological strata, an idea that Jussi Parikka also addressed in his 'Geology of Media' (2015). *Molten Media* embodied an archaeologically-orientated exploration of digital decay. There was no space for information left in the entirety of the installation and the behaviours of interactivity, computability and commutability were not even contemplated. The physicality of the once functioning digital element is here rendered as a material object that seemed to have lost its purpose. The work invited the audience to look at obsolete devices which belong to a very recent past with a different perspective, perhaps a more sustainable and less anthropocentric one. In a human timescale, these were made less than fifty years ago, they are very recent objects which had a very short lifespan. However, they will be trash forever. Through *Molten Media*, we were able to look at these as if they were artefacts belonging to a previous civilization. The work thus contributed to the temporal displacement that defined the exhibition experience of digital decay in its entirety.

Conclusion

machines will watch us die was conceived as a research platform to explore what a material turn in curatorial practice could look like. The theme of the exhibition, digital decay, allowed to rethink notions of digital materiality and temporality through the selected artworks, all of which addressed the theme through a variety of materials and timescales that belong to digital culture. The adoption of a comprehensive idea of digital materiality – embedding processes of material and immaterial nature – was the foundation on which the methodology for a material turn in curatorial practice was developed. The exhibition explored digital decay in the interconnections between various material and temporal dimensions which blurred the boundaries between digital and human times. *machines will watch us die* reconceptualised digital decay as a material process embedded in the disjunctive temporalities of contemporaneity. By adopting the conceptual framework of media archaeology and new materialism, the temporal definition of materiality was used to rethink curatorial strategies for digital art based on immaterial behaviours such as interactivity. This led to curating a show in which digital decay created an uncanny digital environment – defined by its lack of immaterial interaction – aimed at stimulating a creative experience in the viewers.

machines will watch us die embodied a critique of the inconsiderate use of digital technology across socio-political and environmental territories. In line with media archaeology, the critical inquiry towards the hype of the Internet and digital culture turned into a speculative attempt to look at how curatorial strategies for new media art could have been alternatively developed if the myth of immateriality were substituted by that of materiality in the Nineties. Nowadays, discourses on global warming, human and natural resources exploitation and e-waste accumulation, force us to rethink digital culture under more material perspectives. We are now living the hype of material culture and we need to explore to what extent the material by-products of the immaterial – a tendency that already begun with Les Immatériaux in 1985 – are impacting contemporaneity: *machines will watch us die* reflected *"on themes of consumerism, loss, failure and shows digital decay as a process which is shaping future archaeological scenarios for the digital culture of our times."* [xxxiv]

Notes

[1] The Variable Media Initiative born in 1999 and which now comprises a variety of institution and archives such as Rhizome is an example of this trend.

[2] ''*Within new media history, media theory and cybercultural studies, this provocation has focused attention on the materiality of the medium, of information, and of communication, inspiring research on a wide range of topics, from the material substratum of media to the human body's interaction with technology to the socio-economic systems which support that interaction*'' Critical Terms for Media Studies (Bill Brown, 2010:50).

[3] Extract from the exhibition rationale.

[4] Geoff Cox and Jacob Lund, The Contemporary Condition: Introductory Thoughts on Contemporaneity and Contemporary Art (Berlin: Sternberg Press, 2016).

[5] Lucy Lippard, *Six years: the dematerialization of the art object from 1966 to 1972* (Berkeley; London: University of California Press, 1997).

[6] *Les Immatériaux (*1985), curated by Jean François Lyotard at the Centre Pompidou in Paris.

[7] Jussi Parikka, A Geology of Media (Minneapolis London: University of Minnesota Press, 2015).

[8] In *Realism Materialism Art*, Diana Coole defines New Materialism as a 'philosophy of becoming' and describes 'materialization as a dynamic process rather than a state'. (2015:46)

[9] New Materialism has also influenced the temporal definition of materiality embedded in the show. Quentin Meillassoux and Timothy Morton's notions of time, as a dia-cronic image (Meillassoux, 2008) and as a hyperobject (Morton, 2010), respectively, propose a concept of time that is a feature of unstable, dynamic matter, and has a life-span of billions of years. In ''After Finitude'', Meillaissoux links the term *dia-chronic* to the scientific discoveries that demonstrate the existence of matter ''anterior or ulterior to every terrestrial relation to the world' (2008: 112)'. In *The Ecological Thought*, Morton explains *hyperobjects* as objects that are massively distributed in time and space as to transcend spatiotemporal specificity, such as global warming, styrofoam, and radioactive plutonium (2010:130). Thus, by repositioning human and non-human materiality into new space-time coordinates, these accounts of time can be traced back to Lyotard's image of the Inhuman (1991). The philosopher presents the image of the 'death of the sun' to argue that thought can and will exist without body (Lyotard, 1991). For Lyotard, the sun will die in 4.5 billion years and this will inevitably lead to the end of human thought as we know it.

[10] Extract from the exhibition rationale

[11] Barad, K. (2007) *Meeting the Universe Halfway: quantum physics and the entanglement of matter and meaning*, Durham, London: Duke University Press.

[12] This is an idea discussed by Erkki Huhtamo who argues against interactive technology as something that '*'has been marketed as a patent solution for almost any problem in today's post-industrial society*'' (Huhtamo, 1995),5.

[13] Kristoffer Gansing (2003) explains interactivity in terms of the 'imaginary power' that it has come to possess in a consumerist society in the search for the ever new. The lack of interactivity in the exhibition also stands for a critique of consumerism.

[14] https://www.e-flux.com/architecture/superhumanity/66879/spatial-thought/

[15] The work as time-machine is an idea formulated by media archaeologist Erkki Huhtamo (1995).

[16] Extract from the exhibition rationale.

[17] No capitals were used in the titles to distance the show from anthropocentric conventions that states that names and titles should be capitalized.

[18] Martin Howse's works and workshops often resemble lab-style projects. For example, see: http://shiftregister.info/post/162042241984/earth-observation-source-workshop-at-hyyti%C3%A4l%C3%A4

[19] Extract from the exhibition rationale.

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5. Reviews

James Mathews-Hiskett and Abi Mitchell reviewed the exhibition for Creative Tourist[1] and Corridor8,[2] respectively. Both reviews were positive and emphasised the material nature of digital technology as a means for exploring decay. Obsolescence and dystopian scenarios were also mentioned, as well as a focus on the present of digital culture, which signifies that the convergence of temporalities and the post-medium approach to digital materiality were experienced by the reviewers on some level.

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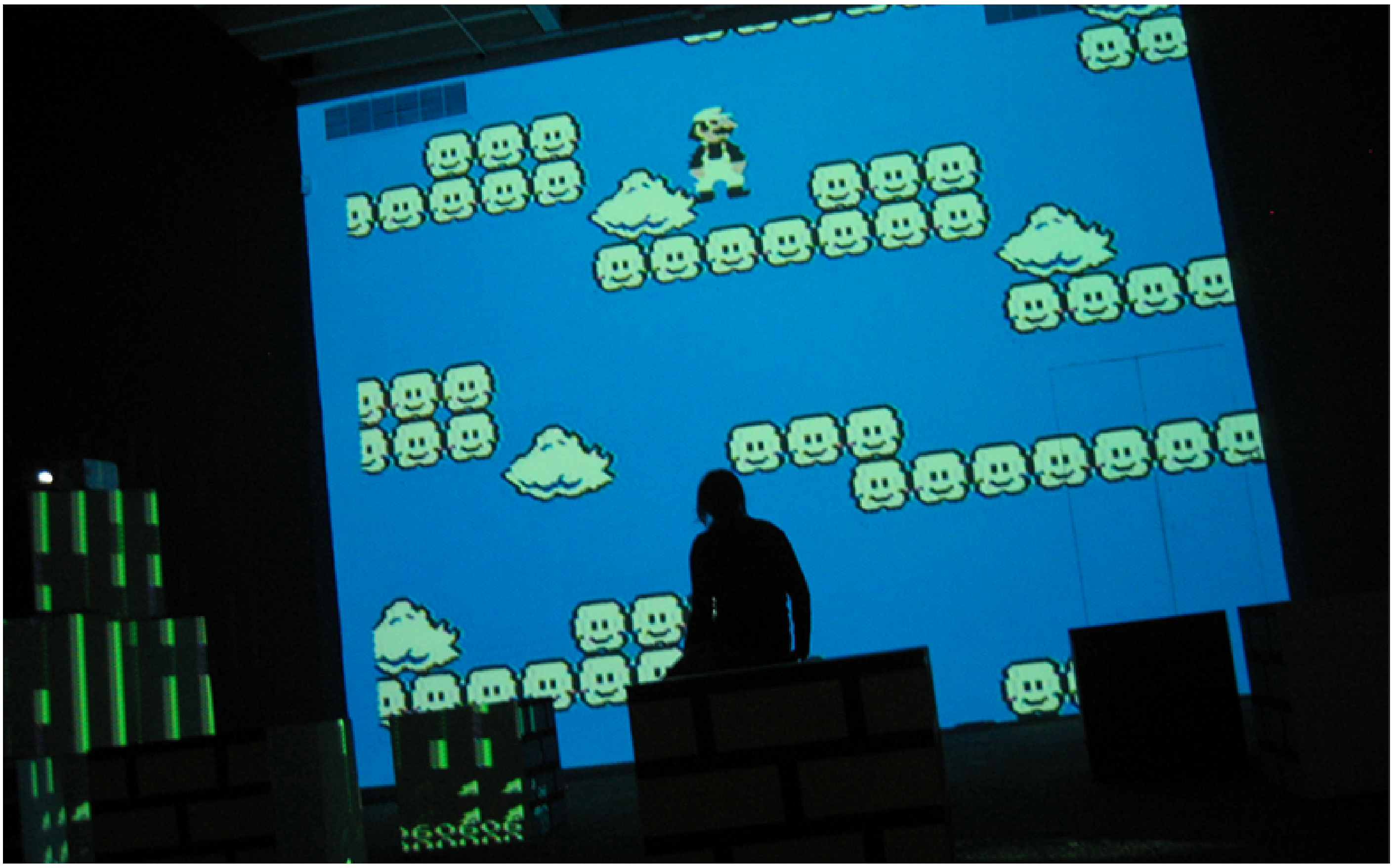
[1] https://www.creativetourist.com/event/machines-will-watch-us-die/

[2] http://www.corridor8.co.uk/article/machines-will-watch-us-die/

machines will watch us die at The Holden Gallery

James Mathews-Hiskett

Last Updated 30 April 2018



Cory Arcangel

machines will watch us die at The Holden Gallery, Manchester, 9 April–11 May 2018, free entry - Visit now

Attempting to link the monumental time scales of minerals and ores to the instantaneous transfer of digital information is quite an undertaking, yet *machines will watch us die* at The Holden Gallery does just that. Curated by Patrizia Costantin (PhD student in curatorial studies) the exhibition explores how the development of seemingly immaterial digital technology is grounded in our material surroundings; addressing themes of digital decay and obsolescence without falling into a typically narrow-minded, negative view of technology. As such, visitors are encouraged to consider the earth-bound roots, and social and historical context, of the machines that surround us.

Among the six artists included in the show, Martin Howse uses raw earth materials to manipulate and explore digital technology, acknowledging the common roots of the geological and the technological. His approach blurs artistic practice and scientific enquiry resulting in a unique viewpoint of our digital surroundings, in this instance leading to the intriguing installation *Test Execution Host* (2016-18).

Meanwhile, Emma Charles combines the ephemeral and the material to expose the often-hidden physical reality behind our experience of the digital. The film *Fragments on Machines* (2013), for example, uncovers the imposing and tactile roots of digital systems that go unnoticed within urban architecture. Whilst Charles’s films clearly document the physical processes that bring about ephemeral digital realms, an air of mystery and the unknown also remains. How soon will Charles's documentations become dated and nostalgic as a result of the relentless development of technology? Do they therefore represent a sort of future archeological artefact?

Rosemary Lee also creates future archaeologies that fuse the environmental and the digital. Broken and twisted gadgets are encrusted with semi-precious stones and ores and set within a modelled landscape, more akin to a natural history museum display than an art gallery. Presented in glass cabinets as if they were artefacts from an ancient civilisation, these examples of 1980's and 1990's technology become a vessel to explore blurred timescales and contrasting viewpoints that run throughout the show.

In *Vail/Lakes* (2014) and *Jeans/Lakes*(2016), Cory Arcangel shows us how quickly digital culture develops, swiftly rendering technological objects obsolete and intrinsically linked to a place in history. He uses the iconic computer game character of Mario, his own digital realm dematerialising around him, to illustrate the decomposition of technology in *Super Mario Movie* (with Paper Rad, 2005). Concurrently, Shinji Toya's *3 years and 6 months of digital decay* (7 April 2016 – 7 October 2019, in association with Arebyte, London.), and Rosa Menkmans *To Smell and Taste Black Matter* (2009) exhibit digital decay as pure data loss. They provide a contrast to the material nature of other works in the exhibition and show us the results of digital decay as we experience it at the interface of digital realms.

machines will watch us die is a thought provoking project that expands horizons and brings together artists that compliment, but also challenge, each other. The exhibition is accompanied by a talk and screening with Emma Charles on 8 May, and a symposium taking place on 11 May to contextualise the exhibition and further discussion around digital decay, the role of online media, and its role in shaping history.

Attend a free talk and screening to accompany the exhibition on 8 May and symposium on 11 May.

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machines will watch us die at The Holden Gallery, Manchester

9 April–11 May 2018
Free entry

Corridor8

21.05.2018 — Review

Machines will watch us die

Holden Gallery, Manchester

by Abi Mitchell

Rosemary Lee, 'Molten Media' (2013-2018) installation view. Image courtesy the Holden Gallery. Photograph by Anita Kwiecien.

It is assumed that people have a fetishised fascination with digital technology and its ethereal nature; everything immaterial though not irrelevant. However considering all the advertising posters and people flaunting 'devices' on the train I came across on my way to the Holden Gallery it is more likely that digital technology is as tied to material goods as we have ever been, the status symbol combined with a sense of ownership and community. Why else in 2017 would excited buyers have queued for a *full week* to be the first to buy the new iPhone X (pause for reverence).

Cory Arcangel and Paper Rad's collaborative work 'Super Mario Movie' (2005) holds court in the centre of the parquet floor. Pride of place, visible not hidden, is the vintage Nintendo console running the decomposing video image, the physical object integral to the workings and work. The slowly deteriorating image allows us to witness the sluggish death of old technology as those with enough buying power move on and the rest of us are slowly forced to catch up disregarding our old possessions for something new, on trend and 'up to date'.

From old possessions to the far future 'Molten Media' (2013 – 2018) by Rosemary Lee encapsulates Mad Max's wasteland within two cabinets of 'future fossils'. Burnt, discarded electronics settle in the sand, superseded, perhaps the sands of time or the sands of desertification caused by climate change and human over expansion. These works seemed too literal in their presentation, cased objects alluding to an archaeological dig seemed more film set than critical commentary.

From dumpsite to dominion, two dull grey photographs hang on the wall, Emma Charles' 'Surfaces or Exchange' (2012) and 'Fragments of Machines' (2013). The physicality of the internet, the domain of the domain name, all the data we understand to be ephemeral housed in vast chambers of binary code. The unassuming images, one the grey side of a large austere building and the other a dark interior of cables reaching in to the far distance, feel like snapshots of frozen moments in the finite lifespan of buildings and materials.

As analogue forgets naturally digital does not, a cassette tape will eventually fade and grow mute, digital decays in distress creating noise, glitches and errors. Rosa Menkman's 'To Smell and Taste Black Matter' (2009) details through video the over-compressed file of a Skype recording, pastel colours and hazy sound glitch and ripple across the screen. Information overload as the material struggles to hold itself together. Similarly in the first work of the exhibition, Shinji Toya's '3 years and 6 months of digital decay' (7th April 2016 – 7th October 2019) explores the presumed expiration date of a CD-ROM. Video overlay played from a web page will track the decay of a digital file in action across the lifespan of the exhibition.

In *Machines will watch us die* we are in fact witness to the death of machines, the obsolete and the failed. Our limited attention span the killer more than any technical issue. As our average 81 years on the planet run out the material components of machines will cease to work even if they are still in working order. The lifeless cases of iPhones will never biodegrade – discarded on the earth forever – with no user to interface with they will be left to watch as the sands drift in.

Machines will watch us die, Holden Gallery, Manchester.

09 April – 11 May 2018.

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